

# Contractors and Engineers Monthly

Vol. 35, No. 5

MAY, 1938

\$2 a Year, 20 Cents a Copy

## Highlights Of This Issue

### ● Planning a Subway Job

The preparations for Section 6 of the new Sixth Avenue subway in New York City, including the general layout and the safety measures taken, are described in the first of three articles on one of the contracts for this major construction job in New York City.

See page 2.

### ● Stabilization with Tar

The tests to determine the proper stabilizing agent for use with the local materials for a road stabilization job in Shelby County, Tenn., and how the work was done are described in this issue.

See page 2.

### ● An Office on Wheels

Perhaps it was "the gypsy in his soul" but whatever the inspiration, one southern contractor designed and put into use an unusual trailer office which has proved comfortable and efficient as well as easily transportable.

See page 2.

### ● Work at Guntersville Dam

The work at Guntersville Dam, at Guntersville, Ala., a part of the TVA program, is now in its third stage. The method of batching and handling the concrete for this project is described in this issue.

See page 5.

### ● Reconstructing Old Grade

The final work in the reconstruction of the famous Geiger Grade in Nevada, an historical route which played a big part in the old mining days and still is an important route in this state, is described in this issue.

See page 10.

### ● Widening Old Road

An old asphaltic macadam road in Ohio was widened last summer with two 1 to 2-foot hot-mix strips for 9.207 miles. The problems the contractor had to meet were the maintenance of traffic while work was under way and the inconvenience of having a job laid out like a pair of shoe strings.

See page 19.

### IN THIS ISSUE

Bituminous Roads .....	2, 19
Bridge Construction .....	21
Bulletins and Pamphlets .....	38, 39
Cartoon .....	4
Concrete Paving .....	1
Contractor's Office .....	2
County Road Work .....	2, 24
Dam Construction .....	5, 23
Editorial .....	4
Elevated Highway Design .....	4
Grade Separations .....	1, 17
Grading .....	10
Manufacturers' News Items .....	29
Picks and Shovels .....	33
Road Widening .....	19
Safety .....	4, 7
Stabilized Roads .....	2
Subway Construction .....	2



C. & E. M. Photo  
Placing Ready-Mixed Concrete in the Retaining Walls of the Seventh Street Underpass in Little Rock, Ark.

## Hazards Removed By New Underpass

Scene of Many Accidents at Double Railroad Crossing Improved by New Structure in Little Rock, Ark.

THE CONSTRUCTION of the Seventh Street underpass in Little Rock, Ark., during the 1937 season by Uvalde Construction Co., Dallas, Texas, eliminated one of the worst grade crossings in the city and the site of many accidents and near accidents. The project involved the following features: grade and alignment changes of West Seventh Street over a distance of 1,390 feet; skewed double-track railway structures for the Chicago, Rock Island and Pacific and the Missouri Pacific Railroads, which parallel each other at the underpass site; retaining wall construction on either side of the street where such was required by depressing the street grade; construction of a concrete box culvert under the east approach to the under-

(Continued on page 23)

## Air Line Highway Paving Extended in Southern Louisiana

(Photos on page 44)

AS part of its state highway program, Louisiana is pushing the paving of direct routes between its larger cities. The Air Line Highway from New Orleans to Baton Rouge has progressed rapidly and during 1937 another section, 3.361 miles in length, from Kenner toward New Orleans was added. It consists of two 20-foot slabs with a 6-foot neutral ground, replacing an old rough 24-foot black top which was regraded in 1935 and 1936 in preparation for the new concrete pavement.

The 9-6-9-inch slabs have lip curbs on the inside against the neutral ground and a 4-inch parabolic crown to the outside, permitting lateral drainage. The thickened edge of 9 inches is reduced uniformly to 6 inches in a distance of 3 feet with the remaining slab uniform to the center line.

Paving was started June 4, 1937, by T. L. James & Co. of Ruston, La., and a uniform progress of 113.7 feet of 20-foot slab per hour was maintained throughout the contract. The average per day was 1,007.3 feet and the best day's work was 1,572 feet, laid in 12 hours.

### Fine Grade and Form Setting

The grade ahead of the forms was roughed in by a Caterpillar RD7 and a Caterpillar 12-foot blade. The subgrade was rolled with a 6-ton Buffalo-Springfield 3-wheel gasoline-powered roller to secure compaction equal to the consolidated grade below. Immediately following the completion of the rough grade a Cleveland Formgrader powered by a Waukesha motor cut the trench for

### T. L. James & Co. Completes Another 3-Mile Section of Baton Rouge-New Orleans Concrete Artery

the 9-inch Blaw-Knox steel forms. The machine worked well in the sticky Louisiana buckshot clay. Four men followed up, clearing the trenches for the two form setters working under the foreman who handled both grade and form setting. Because of the character of the soil, the contractor used an 8-inch base on the forms and ran a Lakewood mechanical tamper over every foot of forms ahead of the Surgrader which removed all excess dirt from the grade, cutting it to true shape and delivering the excess to the shoulders. The mechanical form tamper, operated by a Lauson engine, had an attachment by which the forms were oiled, using the exhaust of the engine to spray oil from a small tank carried on the machine. The Surgrader was powered with a Wisconsin motor and was equipped for mounting a bridge beside the machine for the passage of the batch trucks if needed. As this was a boulevard job the ramp was not needed except for a very short time on the first strip of concrete when the paver was run between the forms.

The unusually good fine grade behind the machine minimized the work of the four men in the fine grade crew. They checked every foot of the grade with a scratch-board against any chance that the fine grader had "ridden" a hard spot. The soil at times baked so hard that it would have been practically im-

(Continued on page 12)

### THE COVERED BRIDGE APPEARS AGAIN IN NEW HAMPSHIRE



C. & E. M. Photos

Magan-Thibodeau Construction Co. Built This 94-Foot Span Structure in 1937 Over the Contoocook River Between Hancock and Greenfield, N. H. Left, Framing of the Structure, Showing the Welded-Steel Knee Braces. Center, the Approach from the Greenfield End. Right, the 12-Inch Green Oak Boom Used with the Power Shovel for Setting Wing Wall Masonry. Note the Safety Chain Attached to the Mid-Point of the Oak Boom and the Men Scrubbing a Rock Held by the Machine. See Page 21.





# Preparatory Work on City Subway Section

**Spencer, White & Prentiss Exercise Unusual Care to Insure Ease of Operation And Safety of Workers**

(Photos on page 44)

✦ "A carefully planned job is half built" might well be the slogan of Spencer, White & Prentiss of New York City, contractor for Section 6 of the new Sixth Avenue subway in New York City. This contract for open cut, rock tunnel and tunnel-in-air construction was awarded in June, 1937. Immediately work was started on a wide variety of small jobs in preparation for actual subway construction and to insure the safety of everyone connected with the job. These will be discussed under various headings in this article; a second article will be devoted to the methods of open-cut construction and a third to the tunnel-in-air operation.

## Field Buildings

After renting a loft near the middle of the job for the general offices, three field buildings were erected on a plot of land on the northeast corner of Waverly Place and Sixth Avenue, in which plot the main shaft was excavated. The first of these structures is the warehouse and field office built with a steel frame and with fireproof insulating board and outer walls and roof of corrugated iron. The first floor is the storehouse with a large door opening onto an 8-inch concrete driveway on a cinder fill, capable of handling the largest trucks with the heaviest loads to be delivered to the shaft. The second floor is divided into drafting rooms and offices and also includes a complete laboratory for the study of the soils found on this contract and where much valuable research work has been undertaken. Periodically the foremen on the job are given short talks on soil analysis and the behavior of soils of the types they are encountering. This entire building is protected with a Grinnell sprinkler system.

Close to Waverly Place is a one-story building of similar construction, housing the clinic which is completely equipped for handling all emergency cases and first aid for injured workers. In addition, a hospital lock is installed

on the subway mezzanine below, adjacent to the sand-hog locker and rest rooms. It is interesting to note that the contractor, realizing the proximity of this work to a high-grade residential area, not only endeavors to keep the area around the office and clinic clear of debris, but also contracted with a window-cleaning service to keep all of the steel sash windows as well polished as any within many blocks.

Also included in the plot of land with these two buildings is the Board of Transportation Engineer's field office and the hoist house and derrick for handling all materials in the shaft.

## Hoist Shed and Derrick

The hoist shed, located in the northeast corner of the yard, is built in the same general manner as the other buildings, with fireproof insulating board and corrugated iron sheeting and roof. The chief difference is the fact that 2 x 4 wooden studs are used in the walls and roof, with the studs separated so that the insulating board on the inside is attached to alternate studs and the corrugated iron sheeting to the studs between. Thus, any vibration or noise from the hoist or motor is not transmitted by the inner studs to the outer wall, causing annoyance to nearby residents. The front of the hoist shed, which is 18 feet square, is 15 feet high and the back 12 feet high. The entire front and one panel at the left are of glass, permitting



The Working Shaft for the New Sixth Avenue Subway on the East Side of the Avenue, Showing the Hoist and I-Beam Spanner Arrangement on the Bucket.

the operator to have full view of the shaft and of the driveways entering from Sixth Avenue and from Waverly Place. The three-drum Lambert hoist and the Lambert swinger are driven by General Electric motors.

To carry the derrick, a 16-inch pipe pile was driven to rock and then topped with a concrete cap 3 feet thick. The American Hoist & Derrick Co. 25-ton derrick has a 50-foot boom and its back legs are anchored on 15-ton concrete blocks.

The Koppel material buckets used in the shaft are equipped with a roller under the I-beam spanner to prevent the cable or chain from wearing on the spanner.

## Shaft and Stairway

The shaft in the northwesterly corner (Continued on page 22)

# A Trailer Office Proves Successful

**A. C. Campbell Co. Idea for Itinerant Office Is Found Practical and Efficient**

(Photo on page 44)

✦ THE IDEA of using a trailer for the general office of a contractor has been tried out with great success by the A. C. Campbell Construction Co. of Shreveport, La. A. C. Campbell originated the idea and developed it with the help of the Nabors Trailer Co., Mansfield, La. Some of the members of the organization were very skeptical of the whole plan, thinking it not at all feasible to move from a three-room office suite into a trailer without seriously retarding the work by being over-crowded. The plan is a huge success, however, proving practical as well as economical. The trailer is moved about the country, usually spending a whole construction season in one location, this location being chosen at some town conveniently centered in the group of contracts for that season.

The trailer is designated as the "Field Office" but to all intents and purposes it is the general office of the company. It has all of the records for several years back, as well as the books and records of current jobs. During the summer of 1937 this contractor had a job running at Conway, Ark., where the trailer was located, and also had jobs in three other states, the accounting for which was handled in the trailer office at Conway.

The trailer is an all-steel aluminum-coated affair with two windows and a door on one side and three windows on the other side. At the rear of the trailer are double doors opening outward and reaching from floor to roof to facilitate loading and unloading office furniture and equipment. The trailer is equipped with dual wheels at the rear and has a fifth wheel attachment under the nose for connecting to a truck for hauling from place to place. The underframe and outside are constructed entirely of steel with all joints and braces electric welded.

The inside measurements of the trailer are 21 feet from nose to the rear door, 8 feet wide, 6 feet 6 inches high in the center sloping to 6 feet at the walls. The inside is finished in plywood varnished in approximately the same shade (Continued on page 20)

# Tar Stabilization In Shelby County

**Tests to Determine Proper Stabilizing Agent to Use With Local Materials on County Road in Tennessee**

By C. H. OLMSTEAD, Consulting Engineer, The Barrett Co.

✦ SHELBY COUNTY, Tennessee, with Memphis as its County Seat, is located in the southwest corner of Tennessee, just north of the Mississippi Delta. As there is little suitable aggregate for road-building in this section, soil stabilization is particularly adaptable for highway development. Some local sandy gravel is available but this material is deficient in binder clays, making it very unstable in wet weather, and very dusty in dry weather.

The road selected for a stabilization experiment, known as the Altruria Road and connecting the Summerville-Memphis Road and the Arlington-Memphis Road, is located about 3/4 mile west of the intersection of Routes 1 and 15 and extends 1.6 miles northeast and parallel to Route 1.

The Shelby County Highway Department operates a gravel plant at the penal farm where washed gravel is produced for highway surfacing. A large surplus of an excellently graded sand had accumulated and this sand was available for the stabilization work.

## Preliminary Laboratory Study

Samples of the soil and the sand were forwarded to the Soils Division of The Barrett Co.'s Research Department for study and their recommendations. This soil, a very fine silt containing some clay, is typical of West Tennessee, West Mississippi, and Eastern Arkansas.

Laboratory studies were made of the soil, soil with 25 per cent sand, soil with

50 per cent sand and varying percentages of tar. After laboratory mixes were made with various grades of tar, it appeared that Tarvia B, medium grade, having a specific viscosity, Engler, of from 13 to 18 at 40 degrees C, mixed readily with the soil-sand mixture when damp. The stabilization studies were made and the actual road stabilization was done with this grade of tar.

Sieve-test gradings of the soil and sand together with the calculated approximate gradings of the two mixtures appear in a table on page 9.

(Continued on page 9)

Table I  
Parts By Weight

Soil	100	75	50	100	75	50
Sand	0	25	50	0	25	50
Tarvia B, Medium Grade	0	0	0	6	6	6
Optimum Moisture, Per cent by weight based on oven-dry mix	17.5	13.5	11.5	15	11	8.3
Density at Optimum moisture, Pounds oven-dry mix per cu. ft.	110	116.8	124	109.5	118	125.5

Table II

Tarvia B, Medium Grade, Per Cent of Dry Soil	Moisture Present during Compaction, Per Cent Based on Oven-Dry Mix		Lbs. Oven-Dried Mixture Per Cu. Ft.		Capillary Test, Moisture Absorption, 14 Days, Per Cent of Dry Specimen		Immersion Test, Moisture Absorption, 14 Days, Per Cent of Dry Specimen	
	Soil	Soil Mix No. 1	Soil Mix No. 2	Soil	Soil Mix No. 1	Soil Mix No. 2	Soil	Soil Mix No. 1
0	16.9	13.5	11.3	109.6	116.8	124.0	27.9	25.1
4	16.1	11.9	8.2	109.9	118.2	124.8	7.0	3.8
5	15.9	11.5	7.8	109.6	118.4	126.3	5.3	3.4
6	15.7	11.2	8.1	110.6	118.9	126.4	4.7	2.9
7	15.4	10.3	7.4	109.3	118.8	126.8	4.3	2.5
8	14.9	9.8	7.2	109.9	119.2	127.0	3.4	2.6

Table III

STABILITY TEST—TOTAL PRESSURE IN LBS. AT 6.5" MOVEMENT OF PLUNGER								
Per Cent Tarvia B, Medium Grade	Oven-Dried Specimen, 14 Days at Room Temperature			Specimen from Capillary Test			Specimen from Immersion Test	
	Soil	Soil Mix No. 1	Soil Mix No. 2	Soil	Soil Mix No. 1	Soil Mix No. 2	Soil	Soil Mix No. 1
0				600	750	9,800	6,100	7,700
4	10,000(b)	10,000(b)	8,600(a)	8,600	10,000	10,000(b)	6,700	8,300
5	10,000(b)	10,000(b)	9,100(a)	8,900	10,000	10,000(b)	7,400	8,900
6	10,000(b)	10,000(b)	10,000(b)	8,900	9,500	10,000(b)	7,400	8,900
7	9,500	9,500(a)	10,000(b)	9,900	10,000(b)	7,900	8,200	9,600
8	9,400	7,700(a)	9,800(a)	8,700	9,100	10,000(b)	7,500	8,500

(a) Maximum load at less than 0.5 inch.  
(b) Capacity of machine, at less than 0.5 inch.



C. & E. M. Photo  
The Compressed Air Line (Outlined Above), on an Elevated Railway Post, showing the Plug Valve to Which Air Hose and Pneumatic Tools Are Quickly Attached.



# THERE'S NATION-WIDE AGREEMENT AMONG CONTRACTORS

## *when it comes to choosing an Asphalt*

One contractor is paving an airport runway for the City of Philadelphia.

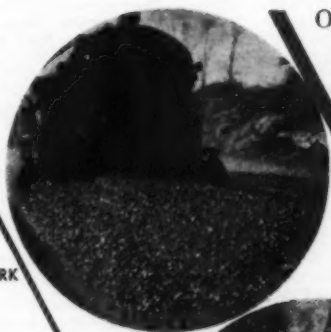
A Texas contractor resurfaces a number of worn city streets.

In Colorado, a third contractor paves the streets of a new real estate development.

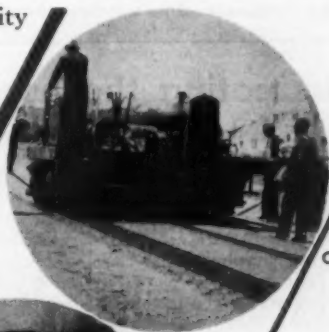
Many other things about these three projects differ, but one thing they have in common—the Asphalt chosen by all three contractors was TEXACO.

And this is typical of the nation-wide agreement among paving contractors on TEXACO Asphalt quality and the service behind it.

NEW YORK



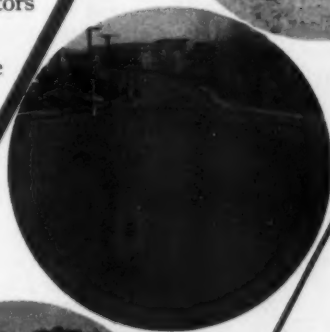
COLORADO



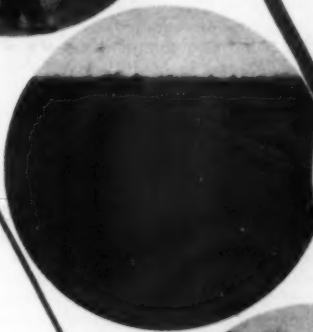
TEXAS



CONNECTICUT



PENNSYLVANIA



OHIO



OKLAHOMA



# T E X A C O



THE TEXAS COMPANY, *Asphalt Sales Department,*  
135 East 42nd Street, New York City.

Chicago  
BuffaloCleveland  
PhiladelphiaKansas City  
RichmondHouston  
BostonDallas  
Jacksonville



# Contractors and Engineers Monthly

THE NATIONAL BUSINESS PAPER OF THE CONSTRUCTION INDUSTRY

Issued Monthly by Bittenheim-Dix Publishing Corp.

Editorial and Business Office: 470 Fourth Ave., New York City

Publication Office: Mount Morris, Ill.

TOM DIX, President  
EDGAR J. BUTTENHEIM, General Manager  
MYRON MACLEOD, Advertising Manager

THEODORE REED KENDALL, Editor  
GEORGE CONOVER, Vice President  
HERBERT K. SAXE, Treasurer

BRANCH OFFICES  
Chicago, Ill., Daily News Bldg., Tom Dix, President  
Cleveland, Ohio, 444 Hanna Bldg., George Conover, Vice President  
San Francisco, Calif., Mills Bldg., Duncan A. Scott  
Los Angeles, Calif., Western Pacific Bldg., W. H. Grubbs

Copyright 1938 by Bittenheim-Dix Publishing Corp.

## Eliminating the Irresponsibles

While the ethics of the construction industry have improved considerably since the days when the contractor took it for granted that he could make something on every bag of cement that went into the job, there must be a continued battle against irresponsibility and chicanery in the industry.

Irresponsibility among contractors is threefold. There are those men with no construction experience whatever who look with an envious eye at the apparent profits made by those already in the game and, believing that there must be "gold in them thar hills," plunge into the business themselves. Then there are the men who have had some minor job and gained a little experience and, with a bit of capital, an overabundance of confidence but insufficient experience, set themselves up as contractors. And always there is the "shoestring" contractor who may know the practical end of the business but hasn't any capital to provide the necessary stability to his efforts. All of these men may be honest and well-intentioned but it is too great a risk of public funds or private capital to entrust a contract for the successful and satisfactory execution of a construction job to such as these, however honest their intentions.

In addition, as long as human nature is what it is, there is the group of definitely dishonest individuals who are without a sense of financial obligation or responsibility and who are out to trim not only the owners but the subcontractors and anyone else who can be trimmed.

Fortunately this latter group is small and both groups are becoming increasingly smaller but to protect the large number of honest, competent and responsible contractors and those who finance construction, steps must be taken to weed out the irresponsibles from the industry, no matter how few they have become.

### The Way to Do It

We have had in this country since 1929 a national clearing house for the construction industry in the Bureau of Contract Information. Its functions are to secure from contractors complete information about personnel, volume of work executed, where and for whom performed, by whom bonded, and final performance; to secure from public officials, engineers and others information on concerns engaged in the performance of public and private construction; and to disseminate information concerning the performance of contracts to public officials, engineers, surety companies and others concerned with the awarding of contracts and the extending of credit to contractors.

Organized as an independent, impartial, fact-finding institution which does not disclose any information without verification and, after verification, makes its disclosures without recommendation, favor or prejudice, the Bureau has

gained the confidence and cooperation of those responsible for the award of both public and private construction, surety companies and those extending financial and commercial credit. Facts disclosed by the Bureau have resulted in withholding the award of more than 1,500 individual contracts to low bidders where there was definite doubt as to their qualifications to insure the satisfactory performance of the contracts in the interest of the public. Surety companies have cooperated, as shown by the fact that, where the Bureau has submitted information indicating lack of proper qualification, only nine surety bonds have been written since the organization of the Bureau.

### Personnel Records Unique

One of the greatest values of the Bureau lies in its unique personnel record. It still does happen that contractors default, go into bankruptcy and then leave the community and their obligations behind them. But in another territory, a new concern, composed of the individuals of the defaulting company, may appear among the bidders. No pre-qualification forms have ever been prepared requiring the past records of the officers of the bidder companies.

The Personnel Record of the Bureau does this. All of the officers of corporations, individuals of co-partnerships and individual operators registered with the Bureau are listed in a blue card file. When the Bureau receives notices of defaults, failures, bankruptcies or other serious unfavorable information, all of the blue cards are removed from the Personnel Record file and for each card a salmon colored card is made on which the trouble is noted. This is attached to the blue card and re-filed. This record discloses the complete history of each individual in the construction industry since the Bureau was organized and in many cases has disclosed to Federal governmental departments, highway departments and others the past records of such individuals.

### Worthy of Support

The main purpose of the Bureau of Contract Information is to cooperate with the public in its interest in responsible construction. Responsible contractors generally desire to have their records on file with the Bureau. Of course, the irresponsible contractors do not file so their records must be secured through special investigation.

Contracts for construction must be awarded on the basis of honesty, experience and competence in the particular type of work called for on that job. Since the Bureau deals with facts—and facts speak for themselves—it is our most potent single force in removing from the contracting industry all traces of suspicion and a "fly-by-night" character and establishing it on a basis of reputable economic stability and assurance of performance.

## Road Accidents Result From Combined Causes

Practically all highway accidents result from a combination of causes and they can be avoided only by definite action on many fronts, said Thomas H. MacDonald, Chief of the U. S. Bureau of Public Roads, recently.

As a result of extensive investigations of many phases of the safety problem, an 8-point program has been suggested by Mr. MacDonald, as follows: 1. uniform state motor vehicle traffic laws; 2. skilled investigation of traffic accidents; 3. the establishment of a uniform system of accident reporting; 4. the establishment of an adequate highway patrol, including the official inspection of vehicles; 5. the establishment of complete and final authority over the issuance and revocation of drivers' licenses; 6. a highway improvement program divided into two general classes of projects, those of the emergency type and those for the long-time plan; 7. a plan of state and Federal safety organization adequate to secure on a wide scale the adoption and enforcement of the action program here proposed; 8. a national educational program.

The first recommendation can be effected by the adoption of the five uniform motor vehicle acts prepared by the National Conference on Street and Highway Safety. Many state laws are deficient in matters such as minimum age limits for drivers, physical and mental requirements for drivers and in specifying standard rules of the road.

Skilled investigation of accidents is essential to an intelligent and efficient police enforcement program. A uniform system of accident reporting is recommended because efforts to combat accidents are wholly dependent upon accurate and complete statistical data. Adequate highway patrols and official inspection of vehicles are needed because the most complete code of motor vehicle laws is of little avail without enforcement. Revocation of licenses for flagrant violations of motor vehicle laws is recommended as one of the most efficient safety measures, with revocation as obligatory rather than discretionary for the more serious cases.

Revising the highway system would make modern traffic safer. Longer sight distances, safe curves and grades and widths sufficient for safe passing are among the important needs. Some of these things should be provided at once. At the same time a long-time planned program should be under way.

Mr. MacDonald believes that there should be coordination between the branches of the Federal and state governments concerned with safety and proposes an inter-departmental committee representing Federal agencies and an advisory committee composed of representatives of national associations which would keep in close contact with a state safety authority in each state.

"A national education program is one of the most important activities to be undertaken," said Mr. MacDonald. "Assuring steps are being taken by educators. One of the greatest hopes for improved safety conditions lies in the implanting of correct thinking and habits in those who are now passing through the public schools."

### Fatality Trends Reported

Records of traffic fatalities during actual hours of darkness from 1930 to 1937 show a 32 per cent increase in night deaths, Dudley M. Diggs, General Electric engineer, recently reported to students at the Bureau of Street Traffic Research at Harvard University. Despite a larger volume of traffic in daylight hours, fatalities dropped 4 per cent for a similar period.

Need for better lighting facilities on heavy-traffic urban and rural highways was stressed by the engineer.



"They Want to Know What Became of the Pirate's Treasure They Buried Here Yesterday"

## Contest for Designs Of Elevated Highways

The designs for elevated highways to relieve congestion and speed the flow of traffic through densely populated cities submitted in the recent contest conducted by the American Institute of Steel Construction indicate that such structures can be both economical and aesthetic.

The first prize was won by Hazelet & Erdal, Consulting Engineers of Chicago, Ill., for a streamlined design supporting a four-lane roadway upon a cantilevered floor beam supported on a central bent, the spread of the legs of which is sufficiently close not to impinge upon but forms a center safety zone in the street below. Mr. Hazelet, who is a graduate of the Massachusetts Institute of Technology, has designed bridges in many countries in the world. Mr. Erdal is a graduate of the Technical College of Trondheim, Norway.

Madigan-Hyland, Consulting Engineers of New York City, won the second prize for a design which was actually built for a portion of the new Henry Hudson Parkway in New York City. E. H. Praeger, Chief Engineer, and C. F. Lloyd, Architectural Designer, prepared the design.

The third prize goes to Walter W. W. Jones, Engineering Illustrative Designer for the Department of Borough Works, Borough of Manhattan, who has worked on many of the new improvements in the city's parks and parkways.

The jury making these awards consisted of Harland Bartholomew, City Planner, St. Louis, Mo.; Col. Willard T. Chevalier, of New York City; Paul P. Cret, Architect, Philadelphia; Loran D. Gayton, City Engineer, Chicago; Paul G. Hoffman, President, the Studebaker Corp., South Bend, Ind.; Albert Kahn, Architect, Detroit; and C. M. Pinckney, Consulting Engineer, New York City.

Most of the designs submitted in this competition were the result of collaborative work on the part of architects and engineers. Foreign designs submitted came from Paris; London; Stockholm; Haarten, Holland; Budapest; Shanghai; Caracas, Venezuela; Vancouver, British Columbia; and Montreal.

Leading traffic authorities have been forced to the conclusion that the only permanent solution of the joint problem of traffic accidents and congestion is through the construction of major traffic routes particularly adapted to meet these problems. An analysis of the physical and fiscal elements leads to the conclusion that the essential functions of this special highway design can be achieved most practically and economically through elevated construction. To stimulate interest in the program, which holds such great promise for the permanent solution of urban traffic problems, the American Institute of Steel Construction sponsored the competition for the design of a structure of this type. It is felt by the Institute that the results fully bear out the expectations.



# Batching and Concreting At Guntersville Dam, Ala.

**TVA Project on Tennessee River, Similiar to Pickwick, Now In Its Third Stage; Details of Operation**

(Photo on page 44)

† THE COMPLETED work at Guntersville Dam, 349 miles above the mouth of the Tennessee River, 9 miles downstream from Guntersville, Ala., and 74 miles upstream from Wheeler Dam, includes the navigation lock, the north embankment, half of the south embankment and most of the concrete spillway section. The cofferdam for the powerhouse area has been driven and excavating for the foundation is now in progress.

The completed lock chamber measures 60 x 360 feet inside, with a 43-foot maximum lift. The overall length of the lock with guard and training walls is 1,308 feet. The dam when completed will have a total length of 3,960 feet of which 856 feet is the spillway section.

## Handling Aggregates and Concrete

The handling of the aggregates from the river barges through to the concrete plant and the forms is direct, simple and effective. The only difficulty is that the 4-inch aggregate contains a certain amount of soft sandstone and weathered chert which does not stand the abrasion of several drops from clamshell and belts and consequently breaks up, requiring extra screening at the batcher bins to remove the small broken material. With this material removed, the aggregate meets all requirements for the designed mixes.

The American Aggregates Corp., of Greenville, Ohio, under contract with the TVA, operates a dredge and floating screening plant up and down the Tennessee River over a distance of about 20 miles, producing washed sand and gravel graded in five sizes, three sizes of gravel and two of sand, for use as concrete aggregate. The loaded barges of aggregate from the dredge for the use of the TVA at Guntersville Dam are towed by American Aggregates Corp.'s equipment to the TVA dock for unloading by TVA equipment.

Cement is received by rail at Hobbs Island or Guntersville, which are termini of the N. C. & St. Louis Railroad's river ferry. The cars are loaded on barges and towed to the TVA landing and thence by rail to the yard tracks of the job. The cement is unloaded from the cars by two Fuller-Kinyon portable pumps and delivered to the foot of the bucket elevator which carries the cement to the top of the Blaw-Knox 6,000-barrel silo. The cement can also be delivered direct from the elevator to the storage bin in the center of the aggregate

bins of the mixing plant by means of a flap valve at the top of the bucket elevator which is controlled by the head-house operator by means of a hand winch.

The aggregates delivered in the barges alongside the TVA dock are unloaded by an American Revolver with a 2-yard Blaw-Knox clamshell to a large Blaw-Knox bin from which the materials flow to a 30-inch aggregate belt conveyor which delivers them to the base of the stacker boom and conveyor. The radial stacker, which has a swing of 300 degrees, stores the various sizes of aggregates in separate piles separated by bulkheads about 7 feet high with a total



A General View of the Concrete Mixing Plant at Guntersville Dam, with the Aggregate Storage Yard and the Recovery Plant in the Background

storage of 200,000 tons. The sizes of aggregates stored are: coarse gravel, 1½ to 4-inch; medium gravel, ¾ to 1½-inch; small gravel, No. 4 screen to ¾-inch; coarse sand, No. 4 to No. 30 screen; and fine sand, finer than No. 30. For reclaiming the aggregates for use

in the batchers, a Northwest crane with a 1-yard Erie clamshell bucket picks up the material from the edges of the piles and loads to an 8-foot square hopper carried on the end of the stacker boom. The conveyor is run backward, carrying

(Continued on page 37)

## BITUMINOUS OR STABILIZED MIXING — CENTRAL OR TRAVEL PLANT



**THE BARBER-GREENE MIXER** is not just for today's—or even this year's jobs. It is designed ingeniously to correctly proportion and mix bituminous and stabilized mixes of any specifications, operating either as a Travel or Central Plant.

The Barber-Greene Mixer is not restricted to any locality. Its high portability gives easy economic justification to as many new set-ups as the jobs require. In spite of its high portability and adaptability to new conditions, the Barber-Greene gives the most accurate control—and the lowest operating cost.

The *high capacity* of this machine means that some other part of your equipment will be the "neck of the bottle"—not the Mixer.

The owner of this Barber-Greene has made a sound investment. Changing conditions cannot lower its value. It will yield profits on every type of low cost road construction.

### SEND FOR YOUR COPY

A new 16 page folder giving complete information on Central and Travel Plant operation, including Bituminous as well as Stabilized work, and with full information on the Barber-Greene Mixer is just out. Send for your copy. There is no obligation.

**BARBER-GREENE COMPANY**

485 West Park Avenue,

Aurora, Illinois

**SIMPLE RUGGED DEPENDABLE**

**STERLING QUALITY**

**CONSTRUCTION EQUIPMENT**

Specify **STERLING** and be assured of successful performance by these **THOROUGHLY TRIED AND PROVEN PUMPS.**

Write Today for Literature and Prices

**Sterling**

MACHINERY CORPORATION  
11111 Southwest Blvd., Minneapolis, Minn.

Accurate Proportioning  
Thorough Mixing  
High Capacity  
Automatic Operation  
High Portability  
Low Clearance

**B.G. BARBER-GREENE**





The Alemite Portable Service Station

### New Unit Simplifies Lubricating the Job

The problem of lubricating the equipment spread out over a large construction project is one which has called forth the ingenuity of many contractors. To meet the need for a portable lubrication unit on such jobs, the Alemite Division, Stewart-Warner Corp., Dept. C, 1850 Diversey Parkway, Chicago, Ill., has developed a time-saving "portable service station" for the power lubrication of tractors and other heavy equipment on construction jobs.

The unit consists of a pick-up truck or trailer on which are mounted Alemite pumps, hose and control valves for handling track-roller lubricant, gear lubricant and motor oil direct from original 400-pound barrels, and a gasoline-driven air compressor. Automatic controls maintain a normal air pressure of 150 pounds in the storage tank, cutting the compressor out when the desired pressure is attained. All connections between the compressor and pump are made with hose to eliminate danger of breakage from vibration or the shifting of any of the component parts. Track-roller lubricant is delivered at a pressure of approximately thirty times the pressure in the storage tank and both the gear lubricant and motor oil are delivered at pressures of approximately eight times the tank pressure.

Outlets are provided for attaching an air hose to the air compressor so that tires may be kept inflated at proper pressures, the compressed air may be used for cleaning machinery or all equipment may be spray-painted on the job with the minimum loss of time.

Built rugged for rough usage, all pumps are sealed tightly against damage by weather or abrasive dirt, and the pumping of greases and oils direct from the original containers eliminates the danger of contamination by grit and the losses attendant upon rehandling for application.

The manufacturer reports that tests on the proving grounds of a tractor manufacturer indicate that this new service equipment makes lubrication possible in approximately one-third the time involved by the hand method, thus offering important savings in time to contractors and state and county highway departments.

### A 3-Ton Tandem Roller

The C. H. & E. Tri-Ton tandem roller, recently announced by the C. H. & E. Mfg. Co., 3849 No. Palmer St., Milwaukee, Wis., can be varied from 2½ to 3 tons and is particularly adaptable for black-top road patching, subgrade rolling, road widening and highway shoulder work. Compact, with overall dimensions only slightly greater than the 2-ton model, this roller can be operated in tight places as well as easily transported from job to job.

Of all-welded construction, this machine is equipped with a simple driving mechanism. Power is transmitted from the Le Roi 4-cylinder 16-hp engine through a flexible coupling and gear reduction which insures ample power on all grades. Final drive is by means of a large ring gear on the rear roller and two bevel pinions, one each for the forward and reverse speeds. Each pinion is controlled by a separate clutch. The roller can be reversed by means of one hand lever. By means of either a foot or hand lever, the machine can be accelerated in either forward or reverse speeds up to 4 mph.

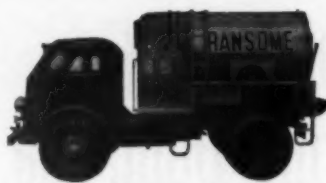
Complete specifications on this Tri-Ton roller are contained in literature which the manufacturer will be glad to send on request.

### A New Truck Mixer

A new line of truck mixers in five sizes of 1, 1½, 2, 3 and 4-yard capacities has been announced by the Ransome Concrete Machinery Co., Dunellen, N. J. All models are streamlined in design and operation, varying only in size, dimensions and power-unit requirements.

The use of welding and high-tensile-strength anti-corrosive steel has resulted in a 40 per cent saving in weight over ordinary steel and an increase in strength, according to the manufacturer. The center of gravity has been carefully considered to provide proper distribution of the load on the truck. The swivel discharge chute has a 180-degree swing and is furnished in two sections. The second section may be quickly detached and mounted on the operator's platform where it is firmly held in position by lugs fitting into notches on the platform and spring clips on the other end. The unit is attached to the truck chassis by clamps, only one hole in each rear side of the frame being required.

The water system has been designed for accuracy and efficiency and yet is very simple. The siphon outlet from the main supply tank is always from the center of the tank by movable pipe and thus measures an exact amount of water discharged even though the truck may not be level. The motor, transmission, reduction gears, etc., are all completely protected against dust, materials, and weather. The sturdy drum rollers with their supports take end thrust loads and transmit them directly to the frame. The charging door, easily removed and replaced for quick charging, and the discharge door are circular in shape and made of high-tensile steel of the manganese type and controlled by hand wheels. The sealing joints are metal to metal, eliminating the use of gaskets.



The New Ransome Truck-Mixer

The complete Black & Decker line of portable electric tools, including drills, screw drivers and wrenches, nut runners, tappers, shears, grinders, sanders and saws, are described and illustrated in the 1938 catalog of the Black & Decker Mfg. Co., Towson, Md.

### 1938 Power Tool Catalog

The complete Black & Decker line of portable electric tools, including drills, screw drivers and wrenches, nut runners, tappers, shears, grinders, sanders and saws, are described and illustrated in the 1938 catalog of the Black & Decker Mfg. Co., Towson, Md.

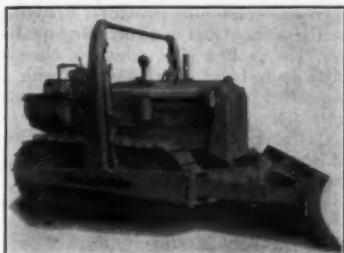
# 36% Greater Yardage

Here are the Figures!

Item	Old Method	New Method
1. 100' of 1" x 1" x 1" concrete	100' x 1" x 1" x 1" = 100'³	136' x 1" x 1" x 1" = 136'³
2. 100' of 1" x 1" x 1" concrete	100' x 1" x 1" x 1" = 100'³	136' x 1" x 1" x 1" = 136'³
3. 100' of 1" x 1" x 1" concrete	100' x 1" x 1" x 1" = 100'³	136' x 1" x 1" x 1" = 136'³
4. 100' of 1" x 1" x 1" concrete	100' x 1" x 1" x 1" = 100'³	136' x 1" x 1" x 1" = 136'³
5. 100' of 1" x 1" x 1" concrete	100' x 1" x 1" x 1" = 100'³	136' x 1" x 1" x 1" = 136'³
6. 100' of 1" x 1" x 1" concrete	100' x 1" x 1" x 1" = 100'³	136' x 1" x 1" x 1" = 136'³
7. 100' of 1" x 1" x 1" concrete	100' x 1" x 1" x 1" = 100'³	136' x 1" x 1" x 1" = 136'³
8. 100' of 1" x 1" x 1" concrete	100' x 1" x 1" x 1" = 100'³	136' x 1" x 1" x 1" = 136'³
9. 100' of 1" x 1" x 1" concrete	100' x 1" x 1" x 1" = 100'³	136' x 1" x 1" x 1" = 136'³
10. 100' of 1" x 1" x 1" concrete	100' x 1" x 1" x 1" = 100'³	136' x 1" x 1" x 1" = 136'³

The new method of concrete placement, using the C. H. & E. Tri-Ton tandem roller, results in a 36% increase in yardage over the old method. This is due to the roller's ability to compact the concrete more effectively, allowing for a greater depth of placement without the need for additional material.





The New Baker Model 321 Grader on an Allis-Chalmers WK Tractor

### New Grader For A-C Tractors

A new Grader, equipped with a rotary-gear hydraulic pump with four-way valve for operation from the tractor cab, has recently been announced by the Baker Mfg. Co., 585 Stanford Ave., Springfield, Ill. The weight of this Grader, which is designed for mounting on Allis-Chalmers Model WK tractors, is 42 per cent less than previous models for the same tractor, due to

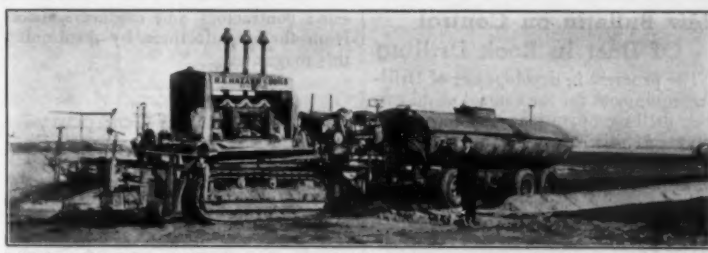
the use of copper-alloy steel and new designing, according to the manufacturer.

The moldboard is 124 inches long, 27½ inches high, 99½ inches wide, outside of beams, and has a drop below ground of 15 inches and a lifting height above ground of 42 inches. With an additional valve, the Grader can be operated in connection with the Baker Model 180 hydraulic scraper.

### Leaning-Wheel Grader

An entirely new leaning-wheel grader, the No. 120, features of which are ease and precision of control, new range and speed of adjustments, direct-action and larger and more powerful hydraulic cylinders, has been announced by the Galion Iron Works & Mfg. Co., Galion, Ohio.

With this grader, it is reported possible to change from a deep ditch-cut setting to a high-lift bank-cut position in excess of 80 degrees with the horizontal in less than 3 minutes, without



A Madsen Road Pug at Work on the Naval Airport on Terminal Island, San Pedro, Calif.

### One-Unit Road Mixer

The Madsen Road Pug, developed by the Madsen Iron Works, Huntington Park, Calif., provides a compact one-unit piece of equipment for road-mix work. It picks up the material in a windrow, mixes it thoroughly and accurately with a measured amount of bituminous material, and discharges it on the road in windrowed form, all in one pass. The features claimed for this unit are a thorough mix in one pass, absolute control of the oil per square yard of material mixed, elimination of balling up of the oil and aggregates, uniformity of mix, and high capacity.

The Road Pug, which has a capacity of 250 tons an hour, is 22 feet 6 inches long, has an overall width of 8 feet 1 inch and a height, less the engine, of 7 feet 4 inches. It consists of a Madsen double-shaft pugmill mixer, a positive displacement-type pump with adjustable volume control, adjustable moldboards, standard Caterpillar transmission and crawler tracks, and a Ford V-8 engine. Diesel power is available if desired. The mouth of the mixer acts as a cutter, skimming the windrow off the subgrade. In order to facilitate control by the front operator on the machine, two inter-piped hydraulic cylinders, one above each track, are used. Working with the hydraulic cylinders are two adjustable pneumatic-tired wheels which limit the depth of cut. The moldboards are adjustable inwardly and outwardly and up and down, and each individual moldboard can be adjusted, to accommodate shoulder mixing operations. An accurate oil meter, built especially for handling hot road oils and emulsions, acts as a check for the positive displacement pump system, enabling the engineer to determine quickly the amount of oil used between stations. The pump is geared with the tracks, so that the amount of oil is increased or decreased as the speed of the unit is changed.

The long mixer body allows the paddles of the double-shaft mixer to perform efficiently, and the discharge end of the mixer is higher than the entrance end, causing the material to move through the mixer slowly and giving the paddles time to agitate and mull. A discharge gate with automatic control creates a back pressure on the mixing aggregates, forcing a compaction in the mixer. The forward travel of the Road Pug is powered with a Ford V-8 engine or by a diesel engine if desired. Standard Caterpillar transmission case, gears, shafts, bearings and clutches are used. The tracks are of the continuous-link type built for regular tractor service.

R. E. Hazard & Sons of San Diego, Calif., has used one of these units on its contract for the Reeves Terminal Airport, a major naval landing base on Terminal Island, San Pedro, as well as for approximately 175 miles of road work for the California Division of Highways.

### Traffic Deaths

A total of 244,000 American soldiers were killed or died of wounds in the fifteen years occupied by this country's major wars since 1776, while almost twice that number, or 442,000 persons, have died in traffic accidents in the last fifteen years of peace, according to the Travelers Insurance Co.

# geon This Job!

These are the actual cost figures on overburden removed and anthracite coal loaded by the Copperell Stripping & Const. Co., working the Wharton vein at Humboldt, Pa.

They show, by direct comparison with costs on mechanical lever-operated draglines on the same job, that Link-Belt Speed-o-Matic hydraulic-pressure control pays big dividends by increasing production 35%.

Stocks, bonds, real estate — none of these can compare with an investment in Link-Belt Speed-o-Matic performance! We have tabulated operating figures on many jobs — some of them the toughest assignments any contractor could tackle. They all prove, beyond question, the vast superiority of the Speed-o-Matic principle.

Link-Belt Speed-o-Matic shovels, cranes and draglines are not merely new and better machines — they are the heads of a new technique in handling materials as a unit.

A Link-Belt shovel specialist will be glad to show you some of these cost figures and discuss their possible application to your work. Ask him to give you the shipping facts. Link-Belt Company, 300 W. Pershing Rd., Chicago, Distribution and Offices in Principal Cities.



"I used an old-fashioned dragline on one of our jobs. It was a real Link-Belt, worked dragline material on the Copperell job. There's a lot of difference between Speed-o-Matic and an old-fashioned dragline."



It is known now that the operator can control the machine from the cab, just as easily as driving a car. This is the new technique in handling materials as a unit. It is the Link-Belt Speed-o-Matic principle. It is the new technique in handling materials as a unit. It is the Link-Belt Speed-o-Matic principle.

# LINK-BELT

## Speed-o-Matic

## SHOVEL DRAGLINE - CRANE



### New Bulletin on Control Of Dust in Rock Drilling

The progress in development of Drill-Vac equipment for the control of dust in rock drilling operations and the applications of this equipment are described and illustrated by photographs and diagrams in a new bulletin recently issued by the Spencer Turbine Co., Hartford, Conn.

The Spencer Drill-Vac is a complete unit for controlling dust, consisting of a vacuum producer, dust separators, vacuum hose lines and a vacuum hood which is applied to the top of the drill hole.

Copies of this Bulletin No. 111, containing complete information on the use of Drill-Vac, may be secured by inter-

ested contractors and engineers direct from the manufacturer by mentioning this magazine.

### New Equipment Company Formed in Birmingham, Ala.

The Alpha Equipment Co., Inc., located at 4011 First Avenue, North, Birmingham, Ala., has recently been organized and is now actively engaged in the sales, rentals and service of construction equipment. Members of this new company are J. L. Praytor, President, who was formerly District Manager for American Hoist & Derrick Co., and Joe Bryan, Secretary-Treasurer, who until recently was connected with the Ed Gantt Machinery Co. of Birmingham.

This company is interested in making additional arrangements with manufacturers to handle their products in the Alabama territory.

### Light-Weight Aggregate For Concrete Structures

Under a licensing arrangement with the Pottscorp. of Chicago, The Celotex Corp., 919 No. Michigan Ave., Chicago, Ill., has acquired the full rights to the manufacture, distribution and sale of Pottscorp. light-weight concrete aggregate.

This aggregate, which is manufactured under a patented process for the water treatment of molten basic pig-iron slag, is claimed to be a light-weight

aggregate combining structural strength, heat resistance and non-corroding qualities. The molten slag, which is chemically neutral and inert, is treated with a controlled volume of water at a controlled temperature, producing a vitreous clinker of porous cellular structure which is reduced by crushing and screening to the desired size.

Complete information on this Pottscorp. aggregate, which is claimed to be particularly adaptable for use in fireproofing steel, for floor systems, long-span bridge decks, monolithic structures, and similar uses where light weight or fireproofing qualities are an important consideration, may be secured by interested contractors and engineers direct from The Celotex Corp. by mentioning this magazine.

# TEAMWORK

*to the Tune of  
1800 Yds. a Day*

## THESE 3 LORAIN-40'S

of the Luck Construction Corporation are handling a 150,000-yd. drainage contract on the Front Royal, Va., project of the American Viscose Corporation.

Teamwork between the shovel, backdigger, and dragline is essential to the success of this operation as each is dependent upon the steady production of the other for a profitable day's work. And not one has shirked its responsibility, for each is averaging 600 yds. per 10-hour day for a grand daily total of 1800 yds.

Performance such as this gives proof to the Lorain-40's versatility. Regardless of the boom equipment used, the Lorain-40 utilizes but one simplified turntable of Center Drive design which incorporates all essential mechanical requirements for dependable, low-cost operation.

Write for catalog containing complete construction and performance data.

UNIVERSAL CRANE DIVISION  
THE THEW SHOVEL COMPANY  
LORAIN, OHIO



# 3/4 YD. LORAIN-40'S





Applying Water to the Windrow and Mixing on a Stabilization Project in Shelby County, Tenn.

## Tests for Stabilizing Agent for County Road

(Continued from page 2)

Determinations of silt and clay were made by the standard hydrometer method.

The soil was soft and fine, high in silt, and when dampened was readily compacted. The soil had definite plasticity with a plastic limit of 25, a liquid limit of 32.5, and a plasticity index of 7.5. Mixing tests showed that dampening the soil prior to adding tar was most desirable, and that the Tarvia should not be heavier than heavy grade Tarvia B, specific viscosity, Engler, at 40 degrees C, 18-35, with the medium grade being preferable. The mixtures containing sand displayed much better distribution of the tar but required preliminary dampening and the same limitations on grade of tar.

Compaction tests were made to determine optimum moisture and density by the customary laboratory procedure without tar, and with medium grade tar in the proportions of 6 parts to 100 parts of dry soil. Curves developed from these tests provided the data shown in Table I on page 2.

Tests of the soil and the two mixtures with sand were made, using medium grade Tarvia B. Three sets of dried briquettes with amounts of tar varying from 4 to 8 per cent were prepared, compacting the soil at approximately optimum moisture based on data in Table I; one set remained for 14 days at room conditions, during which period a second set was subjected to the capillary moisture test, while the third was subjected to the immersion test. At the end of 14 days, all three sets were tested by a modified stability test. The laboratory recommendations were based on these results, which are presented in Tables I, II, and III.

In Table I it is shown that, as sand was combined in the mixture, the optimum moisture was appreciably reduced, and at the same time, the density on compaction at optimum moisture was considerably increased. Optimum moisture for mixtures containing tar was reduced as compared to mixtures without tar.

The capillary test, Table II, shows the untreated soil, with or without sand, to be highly susceptible to moisture. These untreated specimens swelled and cracked badly, swelling increasing with the addition of sand, as the cementing power of the clay was taxed, and Soil Mix No. 2 swelled so badly that it could not be used in the stability test. These untreated specimens slumped within 30 minutes when immersed in water.

In Table II, the capillary test shows the waterproofing value of tar in the tremendous reduction in absorption of water by the soils when treated. Here, too, is shown the value of added sand, for Soil Mix No. 1, with only 4 per cent tar, shows about the same resistance to moisture as the straight soil with 8 per cent tar. Soil Mix No. 2 shows increased value by increasing the amount

### SIEVE TEST GRADING OF SOIL AND SAND

Material	Soil (Per cent)	Sand (Per cent)	75% Soil 25% Sand Soil Mix No. 1 (Per cent)	50% Soil 50% Sand Soil Mix No. 2 (Per cent)
Passing No. 4 Sieve.....	100	99.8	100	100
Passing No. 10 Sieve.....	100	95	99	98
Passing No. 20 Sieve.....	96.6	68	91	84
Passing No. 40 Sieve.....	21	31	79	61
Passing No. 60 Sieve.....	97.8	3.4	74.5	51
Passing No. 80 Sieve.....	97.3	0.8	73.5	49
Passing No. 200 Sieve.....	96.8	72.9	72.9	49
No. 270 (wet sieving).....	72	72.6	72.6	48
Silt (0.05 to 0.005 mm).....	23	24	24	36
Total clay (smaller than 0.005 mm).....	11	17.25	17.25	11.5
Colloidal clay (smaller than 0.001 mm).....		8.25	8.25	5.5

of sand.

The immersion test results are best interpreted by curves showing the daily absorption of water, and although no sharp divisions occurred with specimens containing 4 per cent or more of tar, the curves indicate in general that the relative value of increasing tar beyond 6 per cent was too slight to warrant the increase. These specimens showed no cracking or swelling after 14 days' immersion.

In Table III, oven-dried specimens showed peak strength at 6 per cent Tarvia content or less. The specimens from the capillary and the immersion tests

exhibited substantially the same results, with the 6 per cent specimens generally being of peak strength or very close to it. The strengths of the 5 per cent specimens were also very good. All specimens, however, demonstrated the tremendous improvement over the untreated soil.

The stability tests, especially on specimens from the moisture tests, showed the value of sand in imparting strength to the soil. The addition of 50 per cent sand gave a mixture of high strength, whether damp or dry, when bound with tar.

(Continued on page 26)

## EQUIPMENT HISTORY WRITTEN IN FLOOD WATERS



In California, a flood emergency call showed that LeTourneau 'Dozers and Scrapers in service outnumbered all others combined more than 10 to 1 . . . that each piece, under adverse conditions, could do an emergency job quickly—without asking favors.

Along one section of the Southern Pacific main line between Los Angeles and Bakersfield, five LeTourneau Bulldozers, repairing washouts, moved 60,000 cu. yds. in 5 days; then duplicated the performance on channel changes.

. . . At Tulare Lake, (inset) of 75 pieces of equipment called upon to throw up a levee, all but five pieces were LeTourneau . . . 40 Carryall Scrapers alone were represented . . . kept a step ahead of the lashing waters.

Your job may not be an emergency, but you can depend on LeTourneau to lower costs by producing more work with the same equipment investment . . . Savings start the day you see your "Caterpillar" dealer for a demonstration. Will you make it today?

# LETOURNEAU

R. G. LeTOURNEAU, Inc., Peoria, Illinois • Stockton, California • Cable Address: "Boblstone"  
Manufacturers of: Angledozer®, Buggies®, Bulldozers, Carryall® Scrapers, Cranes, Drag Scrapers, Power Control Units, Rosters®, Treedozer®.

\*Name Registered U. S. Patent Office.



## Old Nevada Road Now Modernized

Section of Historic Route  
North of Virginia City  
Realigned; Work Involved  
Heavy Excavation

(Photo on page 44)

♦ A CONTRACT for the reconstruction of the final link in one of the most scenic highways in Nevada was awarded on July 12, 1937, to the Isbell Construction Co., of Reno, on its low bid of \$139,916.31. The work involved the grading, graveling and surfacing of 4.95 miles, 26 feet wide, of the historic Geiger Grade north of Virginia City on a road which had grade stretches as steep as 12 and 15 per cent. The new line roughly follows the old route but new alignments in some sections necessitated some heavy excavation which totaled 245,000 cubic yards, 80 per cent of which was solid rock, and 31,800 cubic yards of imported borrow which came from a deposit of disintegrated granite all of which required blasting. Under this contract, now completed, many curves have been eliminated or given a larger radius, the roadway has been widened, grades kept down to a 6 per cent maximum and the entire segment gravel surfaced and this year it will be given an oil treatment.

On the new alignment the contract called for several deep cuts through heavy compact rock as well as a number of fills, one requiring 23,988 cubic yards and several others of 20,000 cubic yards with side slope easements. Fill slopes were rounded off to a repose pitch. Several hairpin curves were taken off, necessitating some deep fills with long box culverts for drainage.

In August, 1937, 94,600 cubic yards and in September 86,300 cubic yards of material had been cleared from the right-of-way with diesel-powered equipment. At one section near the north end of the job, a 60-foot cut was required. Here the contractor expected to find tough going, with much labor for drilling holes and the use of plenty of powder for blasting. After a careful examination it was found that the country rock would yield readily to the big power shovels. As a result, a 2½-yard



A Couple of Tractors, a Flow and a Carryall Passing in a Rock Out on the Geiger Grade About 3 Miles from Virginia City, Nevada

Northwest chewed away at the altered andesite, and grabbed off big chunks of the stuff so fast that it taxed the truck capacity. The top of the 26-foot wide cut was approximately 60 feet above the road level but the equipment was in good condition and the small-sized mountain rock and dirt was removed in record time.

### Blasting

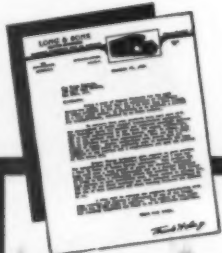
At Davidson's Point, about 1½ miles north of Virginia City, there existed a sharp curve rounding a granite knob. A 25-foot granite dike also projected upward and straddled the line. On the opposite side of the road the drop was over 100 feet. It was a dangerous place for traffic, particularly over the old

narrow road. The contractor drilled 32 holes, 16 feet deep, with air hammer drills, along the right-of-way line, filled these holes with approximately a ton of blasting powder and put on a short but fairly good show. It moved plenty of rock which kept the shovels busy for some time. Approximately 40 tons of powder was used on the entire job, ranging from 7½ to 40 per cent, depending on the hardness of the rock and the depth of the drill holes.

The blast, with some advance publicity, gave power and telephone company officials a temporary nightmare. Main leads to several towns crossed the mountain at this point. Customers of both power and telephone company were anxious about the electric washers and the Monday morning gossip and became alarmed. Going into a huddle, the company officials swapped signals, crews were put on the spot with repair equipment ready for the blast, while the nervous customers were tactfully pacified. In spite of a terrible blow up,

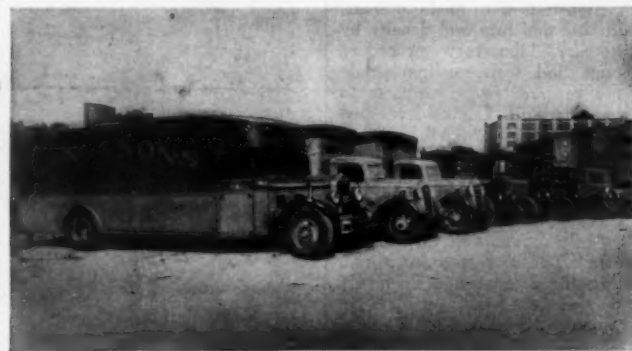
(Continued on page 28)

# Using TEXACO 22 YEARS!



### AS QUOTED FROM LONG & SONS LETTER

"Your oil is used exclusively in our fleet for engine lubrication. Texaco Marfak has been used over a long period of years for chassis, universal joint, and wheel bearing lubrication. Marfak seems to have a cushioning effect and carries the load better than greases previously used. The life of our wheel bearings has been extended considerably by the use of Marfak . . . and wheel bearing failures are unknown to us."



The White, at left, above, has gone 90,000 miles . . . without carbon removal. A recent inspection shows engine in "excellent condition."

### BUYING A MIXER?



### DEMAND:

- Faster Charging and Discharge Speeds,
  - Machined Steel Tracks,
  - 2 Wheel Mounting with Timkens and Pneumatics,
  - End Discharge Advantages,
  - Man-Ten Alloy Steel,
- Send for New Catalog. Prices 3½ to 56 S. Sizes.

THE JAEGER MACHINE CO.  
761 Dublin Ave., Columbus, Ohio

**JAEGER**

BACK in 1915, when the World War was one year old and solid truck tires were standard equipment, Long & Sons, movers and heavy haulers, began using Texaco Products. Today, after more than 22 years, they are still using Texaco.

Read what this user says about Texaco Products, as quoted from their letter, above.

Long engine life and low maintenance cost have been enjoyed for years. Is it any wonder that Long & Sons are enthusiastic for Texaco Truck Lubricants?

Trained automotive engineers are always available for consultation on the selection and application of Texaco Automotive Products. Prompt deliveries assured through 2108 warehouse plants throughout the United States. The Texas Company, 135 East 42nd Street, New York City.



As modern moving engineers, Long & Sons use units like this new light Mack, as well as heavy duty haulers. And they need a lubricant which will protect both. For more than 22 years, Long & Sons have used Texaco with outstanding results.

# TEXACO



## TRUCK LUBRICANTS



### Facts and Figures Booklet Available Free to Readers

An interesting and valuable booklet in a vest pocket size, containing a large amount of information carefully condensed and conveniently arranged, has recently been published by the Pioneer Engineering Works, 1515 Central Ave., Minneapolis, Minn. This booklet includes interest tables, weights, measures, decimal equivalents, power requirements, specifications of aggregates, how to measure wood, ice, liquids, gives short cuts for figuring the length of

belts and correct sizes of pulleys, and a great deal of other useful information. Copies of this reference booklet "Facts and Figures" may be secured gratis direct from the Pioneer Engineering Works by mentioning CONTRACTORS AND ENGINEERS MONTHLY.

### Selecting a Clamshell

Bulletin No. 1606, entitled "Buckets for Contractors," which was recently issued by the Blaw-Knox Co., describes a reliable method for selecting the proper bucket for a given purpose, ex-

plaining the relation of crane capacity, clearances, etc., to the type of digging or rehandling work to be done.

Copies of this bulletin may be secured by interested contractors and engineers direct from the Blaw-Knox Co., 2067 Farmers Bank Bldg., Pittsburgh, Pa.

### Reflectorized Road Signs

A new catalog on plain and reflectorized road signs, describing the new Cataphote one-piece non-deteriorating reflector button recently developed by the

Western Cataphote Corp. in conjunction with the Eastman Kodak Co., has recently been issued by the Western Cataphote Corp., Toledo, Ohio. These buttons may be used for lane and curb marking and for giving night visibility to all types of traffic warning and direction signs.

Copies of this catalog, which also contains information on road marking of all types for state and county highway departments, may be secured by those interested direct from the manufacturer by mentioning this magazine.

## What SIZE Motor Grader Do YOU Need? ☆ ☆ ☆

ADAMS HAS IT!



No matter what your motor grader needs may be—from light maintenance to heavy construction work—Adams has the machine to fit your purse and purpose.

There are the heavy-duty models (such as pictured above), powered by 59 h.p. gasoline engine or 62 h.p. Diesel engine. They not only handle the heaviest of maintenance, scarifying, oil-mix and snow removal work, but will actually build roads from ditch to ditch, including backsloping.

Then there are the standard, popular-priced models (pictured at lower

right), with 42 and 57 h.p. gasoline engines. These machines easily take care of all average maintenance and oil-mix work. Shown below also is a new, low-priced machine within the reach of every town and county. It does a surprising amount of work, including scarifying.

Ask your local Adams representative about these machines or write for catalogs . . . J. D. Adams Company, Indianapolis, Indiana.

NOTE: The Adams line includes leaning wheel graders, elevating graders, hauling scrapers, etc. Catalogs on request.



# ADAMS MOTOR GRADERS



Left: Motor Grader No. 20—a low-priced machine ideal for street and light county road maintenance. Due to special rear drive, its capacity will surprise you. Investigate this machine.

Right: For all average maintenance, scarifying and oil-mix work, you can't beat Adams "standard" motor graders available with two-wheel or tandem drive and with 42 or 57 h.p. engines.





## New Air Line Highway Extended in Louisiana

(Continued from page 1)

possible for hand labor to have produced as uniform a grade as was done by machine.

### Joints and Center Steel

A 4-wheel bridge running behind the fine grader carried the entire assortment of materials for the transverse and longitudinal joints, including Truscon center steel and Johns-Manville asphalt-impregnated cork expansion joint material wrapped in thin paper to prevent dirt sticking to the asphalt. Expansion joints were spaced 90 feet apart with two dummy joints at 30-foot intervals between. The dummy joints were cut 2 inches deep and poured with Tee Juana mineral asphalt after cleaning.

Two men set all the steel for the joints as well as the center steel. The center steel was held vertical and firmly in place by pins at 2½-foot intervals and was set correctly by means of a steel angle-iron gage with a square at the outer end which trued the gage arm when set on the form. Deformed ½-inch steel rods 4 feet long and spaced 5 feet on centers were run through the center steel and held horizontal by pairs of sheet metal pins or chairs with depth gages to prevent pushing them too deep into the grade.

For making up the steel for the dummy joint correctly on the grade, the contractor devised a special gage of ½-inch reinforcing bars welded together for spotting the chairs for the eight ¾-inch x 2-foot dowels spaced 15 inches apart starting 7½ inches from the center steel. They were all dipped in hot asphalt before being brought out to the job and no sleeves were used.

### Installing Expansion Joints

The ¾-inch cork expansion joints, 20 feet long, consisted of two 5-foot and one 10-foot sections, furnished with holes for dowel bars and proper crown. They were dipped in hot asphalt and wrapped with thin plain wrapping paper by the contractor. The cork was held in place with a steel template which was withdrawn after the concrete was poured over the joint. The template was made by the contractor of 3/16-inch material and was slotted on 15-inch centers for the dowel bars. A large wooden square was used to make sure that the template was square with the sides of the slab. The dowel bars, which were spaced on 15-inch centers, were dipped in hot asphalt before placing

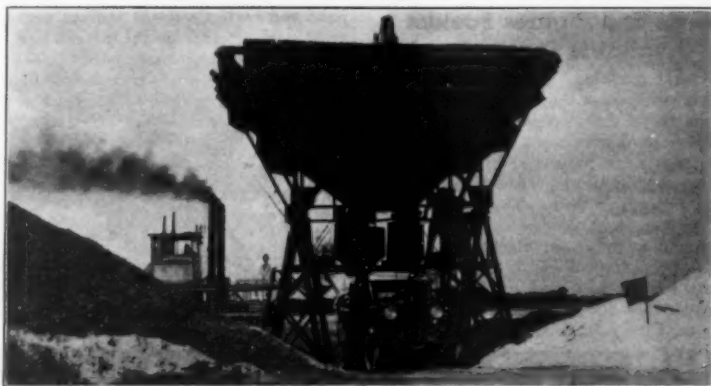
and 4-inch dowel sleeves installed on the ends.

### Water Supply

The contractor used city water furnished by the East Jefferson water works of New Orleans. It was supplied through a 3-inch water line with valves spaced every 400 feet. Sprinkling water was taken from the same valves behind the mixer. There was a 2-inch meter, furnished by the water works, at each end of the job. The average pressure at the mixer was 40 pounds. Approximately 1,500,000 gallons was required for the work.

### Pouring the 20-Foot Slab

When the first 20-foot slab was poured, the paver ran on the grade alongside, and for the second slab it ran on mats placed on the first slab that had cured the proper length of time to permit its use by traffic. The skip of the Koehring 27-E paver had a hammer and rope attached to the under side so that the skip man could give the



C. & E. M. Photo  
Material for the Entire Job Was Brought by River Barge and Stockpiled Around the Matching Plant before Concreting Was Started on the Kenner Section of the Air Line Highway in Louisiana

skip a half dozen good healthy wallops every time it went up so that all the cement and sand would flow into the drum. The paver was set for a 72-second mix which included the time al-

lowed for the flow of the materials from the skip into the drum. Before the concrete was placed, the grade was sprinkled by one of the steel men to prevent

(Continued on page 32)

# KOEHRING SHOVEL

This modern, high speed ¾ Yard Shovel has established highly favorable records in all types of excavating jobs, grading projects, sand and gravel pits, quarry stripping and everywhere a shovel is used. Light weight for speed — high strength steels for durability — make this machine an outstanding, high production excavator.



**KOEHRING COMPANY**  
Pavers • Mixers • Shovels • Cranes • Draglines • Dumpers • Mud-Jacks  
3026 WEST CONCORDIA AVENUE, MILWAUKEE, WISCONSIN

**THE STRONGEST  
GEARED  
POWER  
FOR ITS  
WEIGHT  
IN THE  
WORLD**

**FULL STEEL HAND HOIST**

SEATTLE, U.S.A.  
COMPACT-POWERFUL-SAFE  
"For use where power is not practical or available"  
Manufactured in 2, 5 and 15-Ton Sizes.  
For capacity comparison, ½" cable used:  
2-Ton "Lightweight" 75 ft.  
5-Ton "General Utility" 250 ft.  
15-Ton Triple-Geared "Special" 1200 ft.  
Patent instant gear change and positive  
internal brake that never fails, and will  
lock load.

Gear Ratios	Weight	Price
2-Ton 4 & 22 to 1	60 lb.	\$59
5-Ton 4 & 24 to 1	110 lb.	\$75
15-Ton 4, 19 & 109 to 1	680 lb.	\$200

**BEEBE BROS.**  
2724 6th Ave., So., SEATTLE, WASH.  
Warehouse stocks for dealers' supply: Seattle—  
Chicago—Brooklyn—Boston. Complete literature  
and List of Dealers in Principal U. S.  
Cities and Foreign Countries Gladly Mailed.



### Heavy-Duty Trailers In Construction Field

An interesting well-illustrated folder entitled "Cutting Costs for Contractors" and depicting the many uses of Fruehauf trailers in the construction field has just been issued by the Fruehauf Trailer Co., 10928 Harper Ave., Detroit, Mich. These trailers, which include dump trailers, gravel spreader trailers, dirt-moving trailers as well as heavy-duty units for transporting machinery or materials, are designed for economical transportation.

Copies of these new folders may be

secured by interested contractors and state and county highway engineers direct from the manufacturer.

### Flexible Couplings Meet Direct-Drive Conditions

Rybeck flexible couplings, made by the T. L. Smith Co., 2857 N. 32nd St., Milwaukee, Wis., are designed to meet the frequently encountered direct-drive conditions of shaft misalignment, offset between shafts, end play of shafts, and shock. Because these couplings are flexible in all directions, they can meet

all these conditions.

A description of the features of Rybeck flexible couplings and information on their installation and use are contained in Bulletin No. 179, copies of which may be secured direct from the manufacturer.

### New Bucyrus-Erie Dealer

Announcement has been made by the Bucyrus-Erie Co., South Milwaukee, Wis., of the appointment of W. L. Hartley, 7031 W. Wisconsin Ave., Milwaukee, Wis., as its representative in Wisconsin and in upper Michigan.

### New Mechanical Rubber Goods Dealers Appointed

The New York Belting & Packing Co., of Passaic, N. J., recently appointed the following companies to handle its line of mechanical rubber goods in their respective territories: the Monarch Belting & Supply Co., 35 Southwest First Ave., Portland, Ore., for the Portland territory; Chase, Parker & Co., Inc., 288-290 Congress St., Boston, Mass., in the Boston territory; and the Wylie-Stewart Machinery Co., Inc., 1400 Exchange Ave., Oklahoma City, Okla., in the Oklahoma City territory.

# SPRING TONIC -

## FOR WINTER-WORN STREETS AND ROADS!

FOR toning-up city streets—or country roads—the "Caterpillar" Diesel Auto Patrol is just about as great a machine as you can possibly find! In fact, it does so many jobs, *and does them all equally well*, that it seems too good to be true. And one of those jobs is blading oil-mix!

With its engine-weight right over the driving-wheels, the "Caterpillar" Auto Patrol gives you the power and traction you must have to handle a heavy bladeful — *speedily and economically*. Then, consider its blade-curvature. Designed for the peak of efficiency, the blade spreads the mix and *works it properly* . . . shortens as well as *better*s the job, saving you time and money!

Add in your savings on fuel and maintenance, and you'll find you're not only toning-up the roads — but toning-up your own pocketbook as well. Then, when you spread the cost of the Auto Patrol over its many jobs . . . blading, grading, ditching, scarifying, and removing snow . . . you'll see that the money you put out is coming back, *and bringing more with it!*

Five "Caterpillar" Auto Patrols on an oil-mix job near New Auburn, Wisconsin. They're mixing 1200 yards to the mile — 10,560 gallons of oil. And look at these low fuel-figures! Three of the Auto Patrols are Diesels — and consume only 15 gallons of 7c fuel per 12 hours. The other two are gasoline-powered, and use but 26 to 28 gallons of 12½c fuel.



A city job . . . two "Caterpillar" Diesel Auto Patrols blading and laying mix on the streets of Cheyenne, Wyoming. Each machine consumes only 2 gallons of 8c fuel an hour—covering about 1 mile a day!



Savings on aggregate! Here is a "Caterpillar" Diesel Engine driving a 3-cylinder, single-stage Davey air compressor . . . a 10-40 Good Roads jaw-type crusher . . . a 16 x 24 New Holland roll crusher . . . a 42" x 16" revolving screen . . . and an 18" x 38" bucket-elevator. This plant is producing 40 to 50 tons of 1½" rock per hour, on only 5 gallons of 8c Diesel fuel per hour!

Good medicine in winter too! The "Caterpillar" Auto Patrol handles moderately heavy snows without the plow-attachment, because its wide blade pulls drifts and banks from curbs and gutters—allowing free drainage. This Diesel, working in Spokane, Washington, is one of five owned by the city. Each uses only 1.3 gallons of fuel per hour!



# CATERPILLAR TRACTOR CO.

PEORIA, ILL.

DIESEL ENGINES • TRACK-TYPE TRACTORS • ROAD MACHINERY





A Blaw-Knox Cement Bag, Loaded and Sealed, in the Rear Compartment of a Hatch Truck

### New Bags for Hauling Bulk Cement Batches

A new means of batch hauling and dumping bulk cement on construction jobs has recently been announced by the Blaw-Knox Co., 2067 Farmers Bank Bldg., Pittsburgh, Pa. This bulk cement container, which has the capacity of eight standard bags of cement, is made of heavy canvas, rubberized on both sides to form a weatherproof material, and reinforced as well as multiple-sewed at points of strain or wear. The reinforced hem at the closed end is constructed for bolting to the partition board of the hauling truck. The other end is open and equipped with flap covers. After loading, the end flaps are folded down and the weight of the cement pressing against the aggregate seals the bag.

During transportation, the loaded bag lies on top of the sand and stone batch in the truck compartment, as shown in the illustration. When dumping the batches into the paver skip, the flow of the aggregates releases the pressure on the folded flaps. The action of gravity then opens the cement bag automatically and the cement flows into the skip together with the sand and stone.

### Rebuild and Repair Worn-Out Equipment

The use of modern electric arc welding in the rebuilding and repair of worn out or damaged equipment in the field has been found by many contractors a time and money-saving procedure.

The P & H-Hansen 150-ampere welder trailer, made by the Harnischfeger Corp., 4419 W. National Ave., Milwaukee, Wis., is a double-duty unit designed particularly for maintenance service, either in the shop or on the job. The unit consists of the complete arc welder with a heavy-duty air-cooled Wisconsin gas engine furnishing the power, mounted on a sturdy two-wheel trailer. The single control current makes P & H-Hansen welders practically automatic in operation, according to the manufacturer, and the stabilized arc assures constant heat and deep uniform penetration.

### WON'T QUIT or cause time out



A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

The Hayward Company  
32-36 Day Street  
New York, N.Y.

**Hayward Buckets**

Complete information on this maintenance and repair welding unit may be secured by interested contractors and state and county highway engineers direct from the manufacturer.

### New Half-Bag Mixer

The new Buddy 3½-S non-tilt mixer, recently announced by the T. L. Smith Co., 2857 N. 32nd St., Milwaukee, Wis., is entirely new in design. Faster charging is made possible by the big waist-high feed chute which permits dumping one half of the cement bag directly into the mixer. The large diameter extra-narrow drum produces fast and effective mixing action, the eight full-width buckets constantly working the batch from the ends to the center of the drum. The discharge chute is operated by a lever and the batch can be discharged in four seconds, according to the manufacturer.

The drum is carried on a spindle shaft operating on roller bearings. In each end of the tube encasing the shaft is a

sealed roller bearing. The single-unit frame is electrically welded. Power is furnished by a Stover 2 to 2½-hp gasoline engine enclosed in a lockable steel housing. Four types of mounting are available, including roller-bearing auto-type wheels with chromium plated hub caps and oversize low-pressure pneu-

matic tires; solid rubber-tired roller-bearing disc wheels; clincher-tired spoked wheels; or plain steel wheels with roller bearings.

Bulletin No. 182 describing and illustrating the new Buddy 3½-S mixer may be secured direct from the manufacturer by mentioning this magazine.

### NEW WAYS TO CUT MATERIALS HANDLING COSTS

The flexibility and adaptability of the Porta "Model 347" sectional conveyor offers wide opportunities for cutting costs and increasing profit in the handling of concrete and aggregates.

Made up of independent sections. Can be used on wheel truck, caster mounting or on supports as permanent or semi-permanent conveyor. Easily disassembled, easily transported, easily reassembled. Our catalog describes our complete line of portable, sectional, and permanent conveyors designed to suit every contractor's requirement.

**A. B. FARQUHAR CO., LIMITED, Portable Machinery Division**  
Clifton, N. J. YORK, PA. Chicago, Ill.



### BRANCH OFFICES

Birmingham, Ala. 1304-6 North First Ave.  
Butte, Mont. 41 East Broadway  
El Paso, Texas 1417 Texas St.  
Los Angeles, Calif. 2001 Santa Fe Ave.  
Denver, Colo. 1835 S. Emerson St.  
Newton Highlands, Mass. 130 Needham St.  
New York, New York 200 Church St.  
Richmond, Va. 12 North 18th St.  
Salt Lake City, Utah 418 Dooley Bldg.

• Users of Rock Drills know that Cleveland's, besides being fast cutters, require less air for efficient operation. This means a lot, especially when the machines are being run from a portable compressor. In consuming less air, Cleveland's insure maintaining the pressure, and keeping the pressure up means better hole cleaning, stronger rotation, more footage—and with easier work for the compressor to do.

When your compressor labors and gets hot, when it keeps pumping all the time, and yet never gets the pressure up, put Cleveland's on, and watch her settle down to popping off several times a minute! You get more work out of your equipment, and, at the same time, you experience no breakdowns, delays, and excessive repair costs!

If you don't know Cleveland's, try one out with your own operator, and on your own job. Demonstration any time, anywhere. Catalog on request.

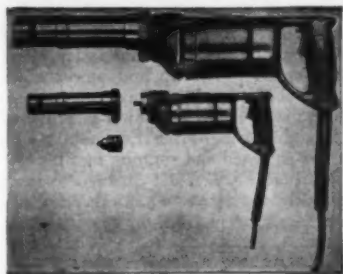
### THE CLEVELAND ROCK DRILL COMPANY

3734 EAST 78TH STREET • CLEVELAND, OHIO

Cable Address: ROCKDRILL

LEADERS IN DRILLING EQUIPMENT





The New C-P Combination Electric Drill and Hammer Drill

### Combined Electric And Hammer Drill

The new C-P No. 200-2700 5/16-inch heavy-duty universal drill recently announced by the Chicago Pneumatic Tool Co., 6 East 44th St., New York City, can be converted in a few seconds to a self-rotating hammer drill, or vice versa, of 1/2-inch capacity in concrete, brick or stone. By applying a lock collar to stop rotation, it can be used for chipping.

Standard equipment with this combined electric drill and hammer drill includes a 3-conductor cable and plug, 5/16-inch 3-jaw key chuck, one drill steel as selected, drill steel holder and drift, hand clamp, rotation lock and spring, Alemite grease gun, 1-pound can of grease, a 5/16-inch socket wrench and a steel carrying case. Optional equipment includes a flat chisel for chipping in place of the drill steel and holder.

### Changes in 1938

#### Line of FWD Trucks

There are a number of changes and improvements in the 1938 line of FWD four-wheel-drive trucks made by the Four Wheel Drive Auto Co., Clintonville, Wis. Designed for maximum performance and modern styling, the SU, SUA and M series of models incorporate the FWD principles with new features for increased comfort and convenience.

For the three series, the entire cab, fenders, hood and radiator have been redesigned for a more pleasing appearance, a V-type windshield is used, fenders are skirted and the fuel tanks are concealed under the skirting on the running boards, thus making possible an enlargement of the cab. Filler spouts for the fuel tanks are readily accessible from the outside of the cab.

While the general principles of construction are practically the same as on previous units, on the SU and SUA models the frame width has been changed from 36 to 34 inches, permitting more tire clearance where duals are used on the rear. The rear springs have been increased from 2 1/2 to 3 inches in width, with new spring hangers, both front and rear. The swinging-shackle type of hanger is now being used instead of the sliding-shackle type. This permits better lubrication and reduces wear when the truck is operated on sandy or dusty roads, according to the manufacturer.

To permit the ready installation of various control valves for the operation of snow plows, underbody scrapers and other hydraulically controlled equip-

ment, the instrument panel has been offset to the left of the cab and is readily visible to the operator.

In addition to these new models, a new Model HG maintainer truck, designed primarily for underbody scraper service, has been announced. This new model is powered with a 381-cubic inch 85-hp seven-bearing engine and has a very rugged driving mechanism, providing continuous operation in its lower gears, including a 14-inch single-plate clutch and an oversize five-speed transmission and transfer case. With the motor operating at governed speed, the unit has a low-gear road speed of approximately 4 miles an hour and a high-gear speed of 37 miles an hour. The truck, equipped with 7.50 x 20 tires as standard, has a chassis weight of 6,530 pounds. Like all FWD trucks, the driving mechanism is fully enclosed, including the life-time front axle steering and driving knuckles and full-floating axles. Other features are the shock-absorbing silent chain in the transfer case and the FWD center differential. A generous clearance of 23

inches at the lowest point allows for underbody grader or scraper mounting.

### Line of Tractor Equipment

Southwest tractor equipment, including a standard sheepsfoot roller, a tamper scraper, the Southwest Special removable-shoe-type tamping roller, heavy-duty road rippers and the cable-operated carry scraper for dirt moving,

is made by the Southwest Welding & Mfg. Co., Inc., Alhambra, Calif. This equipment which is all constructed by the Lucas process of arc welding is designed to meet the requirements of excavating and dirt-moving jobs.

Complete information on this line of tractor equipment is contained in an illustrated catalog, copies of which may be secured direct from the manufacturer by mentioning this magazine.

RAIL CRANES SHOVELS DRAGLINES ZEE ROTATORS	<h1>BROWNING</h1> <p>has had no peer for 40 years</p> <p>← AT YOUR SERVICE FOR THESE PRODUCTS →</p> <p><b>THE BROWNING CRANE &amp; SHOVEL CO.</b> Established 1899 Main Office and Factory: 16225 Waterloo Rd., Cleveland, Ohio Export Department: 20 Church St., New York, U.S.A.</p>	CRAWLER, TRUCK AND WAGON SHOVELS DRAGLINES CRANES - HOES
BROWNING PRODUCTS		BROWNING PRODUCTS
DIESEL GASOLINE STEAM ELECTRIC		DIESEL GASOLINE STEAM ELECTRIC

*...rock goes through my*  
**TELSMITH CRUSHERS**  
*just like*  
*shell corn*

Pontiac Stone Co. plant, near Pontiac, Ill., owned and operated by A. E. Markgraf in connection with his sand-lime brick plant. Equipped with Telsmith Crushers, it crushes 100-150 tons of 12-in. maximum size material per hour.

A. E. Markgraf has operated crushers for over 25 years. He says, "The Telsmith Crushers crush from 10 to 150 tons of rock into the coarsest 10-in. material. It puts out more tons before they are any more than 10-in. size."

The 16-B Telsmith Crusher (shown in set) is used to crush 100-150 tons of 12-in. maximum size material per hour. It is a high-speed 16-B Telsmith Primary Breaker for coarse crushing in his plant. His three trucks have been kept busy feeding it ever since... a 1000-ft. haul, 4 to 5 tons per truck-load... and as high as 26 loads in 17 minutes have been put through.

"The rock goes through my Telsmith Crushers just like shell corn," says A. E. Markgraf. A quarry man for over twenty-five years, he knows his crushers. And he's had complete satisfaction with Telsmith Crushers ever since he bought his first one, some 18 years ago.

In 1936 he bought a high-speed No. 16-B Telsmith Primary Breaker for coarse crushing in his plant. His three trucks have been kept busy feeding it ever since... a 1000-ft. haul, 4 to 5 tons per truck-load... and as high as 26 loads in 17 minutes have been put through.

"Our demand for 3/4-in. rock became so great that we replaced two reduction crushers of another make, powered with 50 and 35-hp. motors, with a Telsmith Gyrasphere which we powered with a 100-hp. motor, and practically doubled our capacity of small rock—yet we used less power with the Gyrasphere than with the other two," said Mr. Markgraf, "and we don't have so much slabby stuff." Why not find out for yourself why Telsmith crushing equipment turns out a better product at the lowest cost per ton. Write for Bulletin Q-34. GC-2

50 Church Street  
New York City

211 W. Wacker Drive  
Chicago, Ill.

713 Commercial Trust Bldg.  
Philadelphia, Pa.

81 Binney St.  
Cambridge, Mass.

412 Westinghouse Bldg.  
Pittsburgh, Pa.

Brandel M. & S. Co.  
Louisville, Ky.

TELSMITH ENGINEERING WORKS, 1014 N. HOLTON ST., MILWAUKEE, WIS.

### SAND'S-STEVEN'S Line & Surface LEVEL



Endorsed and Adopted by Road Builders and Contractors

Level is easily and quickly attached to line. Special feature construction prevents accidental detachment from line. Construction is sturdy, and accuracy guaranteed.

SAND'S LEVEL & TOOL CO.  
8331 Gratiot Ave. Detroit, Mich.





The New M-B Road Marker

### Truck-Mounted Marker For Traffic Stripes

A new light-weight road marker for painting traffic stripes, which can easily be attached to a truck or motor car, has recently been announced by the Meili-Blumberg Corp., Box C-4, New Holstein, Wis.

The new M-B Road Marker is claimed to provide a clean straight center line on 65 to 75 miles of highway a day. Two continuous bands form the outline for the spray. The paint is then automatically brushed, no surplus paint remaining around the marking. The machine is designed for marking bituminous as well as concrete roads, with any desired paint or with hot asphalt. The stripe can be made narrower or wider by means of a simple adjustment.

After the marking unit is properly set alongside the left rear wheel, which operation takes about 15 minutes, the driver easily operates the equipment as the car proceeds. A guide mounted on the front bumper enables the driver accurately to direct the movement of the vehicle. If desired, the guide may also be swung to the right to follow the gutter line or edge of the pavement. No air compressor is required. Pressure is controlled by an especially designed pump connection with a bypass valve, insuring complete agitation of the paint at all times. A small single-horsepower gasoline engine operates the pump. The tank has a capacity of 60 gallons of paint.

### New Radial Slide Arm For Portable Saws

A new radial slide arm is the feature of the latest models of Speedmatic electric hand saws manufactured by the Porter-Cable Machine Co., Syracuse, N. Y. In less than one minute, without the use of tools, one of these saws may be attached and used on any cutting operation, within its depth capacity, that can be performed with any slide saw, according to the manufacturer. The arm swings to any degree right or left for mitering and the saw tilts to 45 degrees for compound mitering and beveling. The attachment bracket may be quickly turned to put the saw in ripping, ploughing or grooving position. All adjustments are calibrated so that the arm and saw can be locked accurately at any setting.

This arm is sturdily built and is mounted on a saw table 17 inches wide by 41 inches long. The arm stroke is 26 inches. The entire outfit takes but 44 x 31 inches of floor space. It accommo-

dates Speedmatic saws Types K-10, cutting  $3\frac{3}{4}$  inches in depth, K-9 cutting 3 inches, and the K-88, cutting  $2\frac{1}{4}$  inches.

This unit can be used in a shop or out on the job as a saw table or as a portable hand saw, and is equipped with an extra long round jackshaft to permit the use of dado heads and abrasive wheels.

### New 1-Yard Power Shovel

Another power shovel, convertible to dragline, clamshell, crane or dragshovel, has recently been announced by the Bucyrus-Erie Co., South Milwaukee, Wis. This new 29-B has a number of new engineering features, some of which are also incorporated into the 33-B  $1\frac{1}{4}$ -yard shovel shown for the first time at the Road Show in Cleveland.

The 29-B is equipped with the new Bucyrus-Erie speed-type cast V-front, welded dipper which is strong, light, easy-filling and quick-dumping. The patented inserted Beco Tiger teeth are of long-wearing forged tool steel, quickly reversed, resharpened or replaced. A

simple positive-action power dipper trip is standard equipment. Reinforcing diaphragms are welded into the light all-welded boom and strong wide-spaced outside handles hold the dipper firmly into digging.

Other features include sturdy single-shaft drive crawlers giving powerful traction; swing gears and transmission boom hoist and propel enclosed and running in oil; all high-speed shafts opera-

ting on ball or roller bearings; a fast worm-drive boom-hoist as standard equipment; and a special independent high-speed power up and power down live boom-hoist is also available. Gasoline, diesel or electric power is delivered through a straight-line transmission with gears enclosed and running in oil.

Bulletin FBE 29B1 fully describing and illustrating these and other features may be secured from the manufacturer.

### Nelson "JUMBO" Engine Driven Centrifugal Pump Units Mounted on welded steel base and easily portable

These units are particularly adapted for road building and general contracting, for irrigation, and for pumping clear or muddy water from sewers or trenches.

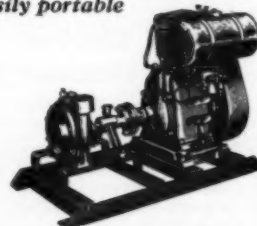
Pumps—side suction, of sturdy construction; open type impeller.

Engine—4-cycle; 1, 2 or 3 hp.; speed 1500-2400 r.p.m., governor-controlled.

Write for circular

Also manufacturers of AIR AND WATER-COOLED ENGINES, LIGHT AND POWER PLANTS, and CONCRETE MIXERS.

Nelson Bros. Co., Saginaw, Mich.



# BLAW-KNOX Self-Aligning ROAD FORMS

The ordinary road form is forced off plumb when the stake hits a stone, because the hole in top of stake pocket has only  $1/16$ " clearance for stake.

The ordinary road form is "tipped" off plumb and line as result of a bent stake, because hole in top of stake pocket has only  $1/16$ " clearance for stake.

Blaw-Knox Self-Aligning Road Form is undisturbed when stake hits a stone. Elongated hole in stake pocket provides liberal clearance—form stays true to line and grade.

Blaw-Knox Self-Aligning Road Form is undisturbed by bent stakes. Elongated hole in stake pocket provides liberal clearance—forms stays true to line and grade.

### ★ Blaw-Knox Self-Aligning Road Forms are the best buy for any contractor, because—

**Easier and Quicker Form Setting**—Inexperienced help can quickly learn how to set Blaw-Knox Self-Aligning Road Forms accurately and rapidly, because alignment of the forms is not disturbed by bent stakes or stakes hitting obstructions.

**More Positive Staking System**—Double wedge insures stronger engagement of form and stakes.

**Eliminate Delays at Paving Mixer**—Re-alignment of forms disturbed by trucks or other equipment quickly accomplished by simple manipulation of the wedges.

**Forms are Stronger and More Durable**—Buttressed and reinforced to take the shocks of modern paving operations and to distribute loads over the entire form base.

Send for Blaw-Knox Catalog No. 1557—and prices.

BLAW-KNOX DIVISION  
OF BLAW-KNOX COMPANY

2067 FARMER'S BANK BUILDING

PITTSBURGH, PA.

Offices and Representatives in Principal Cities

### GRIFFIN WELLPOINT SYSTEMS 33 1/3% more efficient

The ONLY wellpoint with water inflow through entire screen circumference.

WHY?—Because no solid rods or flutes are used as separators!

Write for new catalog.  
"Painted Wellpoint Facts"

GRIFFIN WELLPOINT CORP.

725 East 140th St., New York  
Phone: MEIrose 5-7704-5



## Tractors Pull In Bridge After Pulling Out Dirt

Two Important Operations Handled By Tractors on Elimination of Grade Crossing Near Portville, N. Y.

† THE ELIMINATION of a grade crossing on the Pennsylvania Railroad just outside of Portville, N.Y., involved two important operations. The first was 42,000 yards of excavation incidental to the construction of a new paved highway to pass under the railroad tracks and the second was the installation of the steel and concrete railroad viaduct which, constructed on a temporary trestle at the side of the track, had to be moved over and fitted into its permanent place in the roadbed quickly during a four-hour interval between trains.

The contractor, W. D. Zielly of Olean, N. Y., handled the entire project, including excavation, laying the pavement and the construction of the concrete bridge supports. Two International T-40 TracTracs, one a diesel with a two-wheel scraper and the other a gasoline-powered unit with a bulldozer, moved 27,000 of the total 42,000 yards, the remaining 15,000 yards being removed by a steam shovel. When the time came to slide the bridge from the trestle to its permanent resting place, two T-20 TracTracs fitted with Luther 2-speed winches did the job in two hours, just one-half of the time that had been allowed for it.

### Hardpan with Complications

Excavation for the roadway was begun in the spring and finished in the fall, about a month after the viaduct had been moved into place. The excavation was in tough hardpan and was complicated by other difficulties. Mr. Zielly reports that, when he started, several large trees had to be cleared from the ground where the new highway was to run. Then when he began excavating on the spot where the viaduct was to be located he ran into quicksand. That meant extra work, slow moving, and the use of small light trucks to haul out the dirt. By the Fourth of July things were going rapidly and by September two shifts of men were used. The kind of ground made the work hard on the equipment but the tractors stood up through the whole job without any trouble. By October, all but one unit of pavement had been laid and the ground on which this was to be laid was rapidly being cleared by a Warco grader.

In the meantime work had been proceeding on the railroad viaduct. The steel frame had been set up, the concrete poured, and the ties and rails set. The time had now come to shift the entire 140-ton structure from the temporary trestle to its permanent concrete supports, thus making it an integral part of the track.

### Tractors Star in Two-Hour Drama

There was considerable drama in that operation. The bridge was to be moved after the 6 o'clock express went through and before the next train was due four hours later.

J. W. Branta of Buffalo, N. Y., tells the story of this little drama in *International Power*. "Time that passenger train was coming through," said one of the men, nervously looking at his watch. Then with a rush and a roar it came and vanished in a swirl of dust. Olie Olson, the steel man in charge, hardly waited for the dust to subside. "Let's get going," he said, and signaled the tractor operators to prepare for the pull. Every man was in position and ready.

"The two T-20 TracTracs were anchored about 100 feet from the track. At the signal the winch lines tightened.

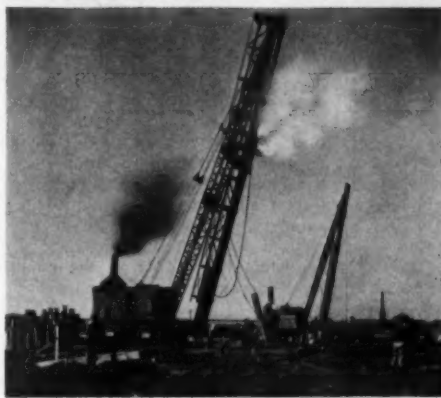
Then slowly the entire 140 tons of steel, concrete, rails, ties and slag began to move along the heavy rails placed between the trestle and the concrete abutments. Every detail of the operation had been carefully worked out, including preliminary trials the day before. As a result the structure was moved smoothly into place, the rails connected, and the finished job tested by the work train in just two hours."

### Steel for Highways

The line of highway steel made by the Laclede Steel Co., St. Louis, Mo., includes wire mesh reinforcing, center joints, shear dowels, dowel spacers, edge tie bars, recess joints, corner reinforcements, center coated tie bars, welded bar supports, expansion joints and metal curbs.

Complete information on any or all of these accessories for concrete roads is contained in literature which interested contractors and engineers may secure direct from the company.

## UNION PILE DRIVING HAMMERS



Sturdy, efficient and economical. One piece frame construction of semi-nickel steel. No bolts in moving parts. Minimum number of parts made of highest quality heat-treated alloy steels.

Complete Pile Driving Plants Designed and Built

Write for Bulletins

UNION IRON WORKS, INC.  
ENGINEERS AND MANUFACTURERS

P.O. Box 18  
ELIZABETH, N.J.

*"Moved 1550 yards—in a single day—on a 1000 ft. haul...—in Georgia"*



● On job after job, the Austin-Western 5-Yard Scaper lives up to its reputation for earning the highest return per dollar invested of any scraper in its class. In a recent letter commenting on his experience with two of these fast stepping A-W Scrapers, Mr. V. L. Bearl, Hart County Grade Foreman says:

"I have been doing grade work for fifteen years and I have never yet seen anything that will in any way equal your 5-Yard Single Cable Scaper with its ease of handling and its ability to fit into any place.

"We hardly ever have to plow up ground for the scrapers unless it is a very hard old road bed or very hard rock. These scrapers cut soft rock almost as easily as dirt. I had a haul today of about a 1,000-foot distance and I moved 1,550 yards of dirt."

This extraordinary capacity is largely due to the easy, positive means used by the Austin-Western 5-Yard Scaper to simplify and

speed up digging, carrying and spreading.

When scaper digs, pan floor is level with ground—all wheels track inside of cutting edge... ability to make 180° turns, permits quick return from dump and easy handling. Operator can dump the entire load... or spread it to any depth up to nine inches... while traveling at full speed ahead.

Electric welded construction assures long, low-cost life and ability to withstand hard usage. Single cable, operating from winch on tractor, controls all operations. 35-40 h. p. tractor is ample power under normal working conditions. Write for complete engineering data and performance records on these 5-Yard Scrapers. They're low in first cost, and economical in operation.



THE AUSTIN-WESTERN ROAD MACHINERY CO.  
AURORA, ILLINOIS



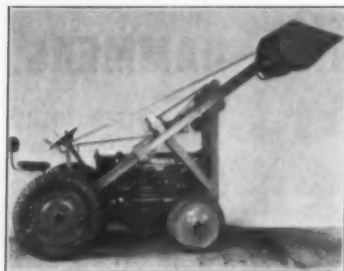
View of an A-W 5-Yard Tractor Scaper on 21 mile road job near Mt. Vernon, Ill., showing machine's exceptional ability to run close to edge of fill for efficient dumping.

# AUSTIN WESTERN

The Austin-Western Road Machinery Co.  
1815 Barrons St., Aurora, Ill.  
Tell me more about the A-W 5-Yard Tractor Scaper and its extraordinary dirt moving capacity.

Name.....  
Address.....  
City..... State..... 58811





The Marvel Shovel Attachment Mounted on a Case Tractor

### New Tractor Shovel: Other Attachments

New models of mechanically operated combination shovel attachments for use with Case, Fordson and International tractors have recently been announced by the Construction Equipment Co., 1235 W. Beardsley Ave., Elkhart, Ind. One of the features of these new attachments is the extendable digging or loading and lifting arms which make it possible to dig or excavate, load, transport, backfill and hoist with but one machine, by a simple change of attachment, without disturbing the main structure.

Power is taken from the front end of the crankshaft by a special hub hook-up and transmitted through a double roller chain to the control mechanism, mounted above the engine housing, thereby giving to the attachment an operation independent of the tractor movement and insuring flexibility. With this attachment, it is possible to dig close to the tractor and with the sliding extendable control arms moving upward to the height of the front standards, approximately 6 feet, then outward and still further upward, the shovel can be dumped more than 3 feet forward of the tractor at a height of from 7 feet 6 inches to 8 feet 4 inches.

The standard shovel is of  $\frac{1}{2}$ -yard capacity, controlled with a cam latch on an independent lever close to the driver. The clutches and brakes are operated by one lever, making them simple to handle and easy to control and, when necessary, to hold the shovel for loading or dump-

ing at any height desired.

After the first installation of the power take-off and the reinforcing plates have been made to the tractor as permanent fixtures, there are only eight bolts to remove, block the shovel and back the tractor from under the attachment structure in order to free the tractor for other uses. The time required for this is 15 to 20 minutes, according to the manufacturer, and to re-install the attachment requires from 10 to 15 minutes.

Complete information on these Marvel tractor attachments is contained in Circular I 30-1, copies of which may be secured by interested contractors and engineers by writing to the manufacturer and mentioning this magazine.

### Booklet on Bulldozers With Hydraulic Control

LaPlant-Choate hydraulic bulldozers, designed for use with Caterpillar tractors, are described and illustrated on a variety of jobs in a 16-page booklet

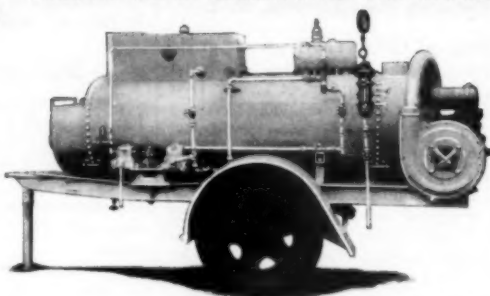
issued by the LaPlant-Choate Mfg. Co., Cedar Rapids, Iowa. The feature of these bulldozers is the hydraulic control system consisting of a pump, valve and hydraulic jacks designed to give positive and accurate control.

Interested state and county highway engineers and contractors may secure copies of this booklet entitled "LaPlant-Choate Hydraulic Controlled Bulldozers" direct from the manufacturer by mentioning this magazine.

## BROS TANK CAR HEATING BOILERS

Modern — compact —  
portable — rugged —  
Light in weight. Full  
pressure in thirty minutes. Return condensate used. Quick adjustable burner. Two, three and four car sizes.

Write for Catalog.



WM. BROS BOILER & MFG. CO. Minneapolis, Minnesota



YOU CAN'T  
HOLD BACK

# PROGRESS

VERY LONG!

Welded Excavator Design is Here to Stay!



**17 DIFFERENT MODELS**  
ranging from  $\frac{3}{8}$  to 5 cu. yds.  
capacity with 7 attachment combinations.  
Gas, Diesel or electric power.  
Write for literature on the size  
and type you need.

● The excavator industry as a whole is quick to recognize each new advancement which leads to lower digging cost. For the past five years, P&H has been the only manufacturer building excavators of alloy rolled steels, all-welded. Today, others are beginning to adopt this more practical design... to meet the new standards of low-cost production which the P&H Pacemakers have set. Harnischfeger Corporation, 4419 W. National Avenue, Milwaukee, Wisconsin.

# HARNISCHFEGER

CORPORATION

EXCAVATORS • ELECTRIC CRANES • ARC WELDERS



HOISTS • WELDING ELECTRODES • MOTORS

## BURCH Chip SPREADER



for

**SMOOTH  
STRAIGHT  
SPREAD**  
—any depth  
—any material

Width and pounds per square yards controlled by independent motor. Strongly built to take abuse—trouble free. Use with any size, rear end, dump truck.

WRITE FOR LITERATURE

THE BURCH CORPORATION  
CRESTLINE, OHIO



# Macadam Widened With Hot-Mix Strips

**Tri-State Asphalt Co. Had  
Contract for 9-Mile Job on  
U. S. 250 Last Summer**

† THE 'OLD story of a long piece of work over which traffic had to be maintained is repeated here in a new dress in a description of the methods used by Tri-State Asphalt Co. of Martins Ferry, Ohio, on 9.207 miles of 1 to 2-foot widening on both sides of the old asphaltic macadam on U. S. 250 south of Cadiz, Ohio.

The first step was to loosen the shoulder where the new widening strips were to be put in. This was done with a Galion road roter following which an Adams No. 12 leaning-wheel grader pulled by a Caterpillar Sixty was used to blade out the material from the edge of the road. The edge of the old macadam was trimmed by hand with mat-tocks and where there was any broken material at the edge it was removed back to solid material. The edge of the pavement and not less than 4 inches lap over on top of the pavement was sprayed with asphalt emulsion, using a Littleford kettle with hand spray attachment.

The widening strip having been cut 1 to 2 feet wide and for a depth of 6 inches, the edge that was to become the new base was rolled with a Galion trench roller and 7-inch Blaw-Knox forms were set 1 inch deep to bring the top even with the surface of the old pavement. Then sand "insulation" was placed by hand to a loose depth of 1½ inches and compacted with the trench roller to 1 inch while wet. A truck with the sand ran along the trench and dumped onto a sheet metal dumping board about 9 x 6 feet and bent up 1 foot in front. This dumping board was pulled by the truck and in traveling it even pulled the whole crew of six men on board. Three men shoveled the sand into the trench, one man raked it to a uniform thickness and two other men broomed the road to remove all excess sand from the surface as this was before the emulsion was applied.

This was a job where the water boy was not to be envied. In the first place he had a mile or more to cover and the men were calling for water all the time in the hot weather and the hot-mix placing crew exuded perspiration faster than they could absorb fresh water. He carried a pail of water and also a watering can with a ¾-inch spout and a tin cup. Instead of allowing the men to dip every time they wanted a drink he poured the water into the cup as they held it. Therefore he should be credited with bringing the art of water boy up to approximately 50 per cent sanitary service.

While we are digressing may we also turn back a step and note the way the trench crew gaged the work they were doing? Boards cut to look like old battle axes were used to gage the distance of the forms from the road surface, in addition to stakes set by the engineers, and also to measure the depth of the cut for the widening strip.

Numerous crews of men were used to prepare the trenches ahead and to set the forms. The contractor had to purchase nearly 9,000 feet of forms for this particular job as two sides of a road 9.207 miles long—well, figure it out for yourself and consider the amount of forms you would need to make any speed at all and gather in any profit from a job resembling a pair of high boot shoe strings laid out along the surface of the ground.

## Placing the Hot Mix

The hot mix was made in the contractor's own plant in Martins Ferry, Ohio,

and hauled 24 miles to the job, something like another record for having things strung out. The trucks dumped the hot mix into a Galion trench spreader box from which it was introduced into the trench by the asphalt crew. It was placed hot 5¾ inches deep so that it was actually ¾ inch above the top of the metal forms. The crew on this work consisted of about nine men for the box, shovel men and rakers.

A unique fire wagon was used for the heating of the rakes. It consisted of half an old oil drum with a number of holes in it to furnish air to the fuel and a bed of soft coal that smoldered. This was carried on a wheelbarrow frame of pipe handles but they evidently conducted the heat too readily for the men had wired a wood cross piece onto the handles and

grabbed that when they had to move the "wagon".

After the material had been placed in the trench it was first rolled down to the top of the forms with a Buffalo-Springfield 10-ton tandem roller named "Bob". It has been many a day since we found equipment named and we still are mindful of our promise to tell our readers the story of the batcher named "Irene". But the postal regulations are still what they used to be and anyway we have told many of you in person. The tandem roller was followed by a Fordson roller with three wheels and the rear wheel only was used to compact the material between the road surface and the forms to about ¾-inch below the top of the forms.

The surface course was spread with the box similarly to the base but only 1¼ inches thick and run over the edge of the pavement where the surface was low. This was rolled at once with the same two rollers, using the rear wheel of the Fordson to break down and feather the edge. This material was com-



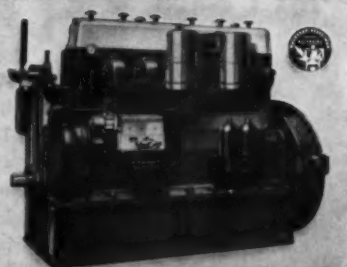
C. & E. M. Photo  
A Layer of Sand Was Spread in the  
Trench and Rolled Before the Hot Mix  
Was Laid

packed to about ¼ inch above the top of the forms.

The oiled forms were pulled about 24 hours after the hot-mix top had been  
(Continued on page 34)

# What?

## A DIESEL OIL ENGINE WITH GASOLINE ENGINE UPKEEP?



# WAUKESHA HESSELMAN ENGINES

Certainly! A diesel oil engine can have the same long life and low upkeep as a gasoline engine—if it is a *low pressure engine*.

The Waukesha-Hesselman Oil Engine can burn its fuel with compression pressures and combustion pressures no higher than those of a gasoline engine. Simply because a spark plug ignites that fuel instead of great pressure.

With a spark plug, starting is quick and easy. Ignition can be definitely timed, and combustion begins promptly. There is no ignition delay. A Hesselman does not have that "characteristic Diesel knock" at light or idling loads. The rate of pressure rise is controlled and gradual. And peak pressures are not even as high as the compression pressures of Diesel engines in the same speed and power range.

Cylinders, pistons, rings and bearings last longer in a Hesselman. And, with its low pressures, a Hesselman does not lose so much in power and efficiency as it grows old. Get the details in *Waukesha Engineering Record No. 6*. A copy on request.

**WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN**  
NEW YORK • TULSA • LOS ANGELES  
THIS IS NO. 3 OF A SERIES ON THE WAUKESHA-HESSELMAN ENGINE



## Louisiana Contractor Has Office on Wheels

(Continued from page 2)

as the inside finish of a modern Pullman car. Built into the nose is a stationery cabinet 4 feet high, providing adequate space for the innumerable forms and stationery. The top of this cabinet provides space for a full-sized electric calculator, an adding machine and a check protector. Along the wall opposite the side door are three desks, two full-sized desks and one three-quarter-size office table with the necessary chairs. In order to regulate ventilation and cut out the glare from facing the window light Venetian blinds are installed on each window.

The above arrangement of the desks allows the placing of one steel filing cabinet at the nose of the office and three steel cabinets at the rear end, and also permits ample walkway from end to end of the office as well as sufficient space for ingress and egress. Permanent telephone and electric light connections are mounted in the frame, making the matter of getting these services into operation a simple procedure in any town.

Excellent light for night work is provided by tube lights mounted on the ceiling in strategic places. By using tubes instead of the regular bulbs head space in the office is not lessened at any point and the light is more evenly diffused. There are several convenient electric outlets for use in running the calculator, fans, or electric heaters.

The floor is covered with a good Brussels carpet which is kept clean by the judicious use of a borrowed vacuum cleaner and discouraging loafing of any nature by members of the organization who have no particular business in the office. As a finishing touch there are a couple of straight-back chairs for business visitors.

### New Submersible Unwatering Pump

On a standard unwatering job, whether it be in a caisson which has been flooded or the first unwatering of a cofferdam, the unwatering pumps can be handled carefully. When it comes to an emergency, on the other hand, speed of installation means everything. Amer-

ican-Marsh Pumps, Inc., Battle Creek, Mich., in its UTA series, offers an unwatering pump with a submersible motor, permitting the entire pump and motor to be put down into the water without damage to the job.

These pumps are capable of handling up to 1,000 gallons per minute. The core cable is a 3-core rubber-sheathed cable running to the motor terminal box. After attaching the cable at the factory, the interior of the terminal box is completely vulcanized with India rubber under pressure. This special vulcanizing process prevents water from entering the terminal box even though the cable becomes damaged. Moisture cannot enter the motor. The submersible motor is furnished with either 60 or 50 cycles alternating current, either single or 3-phase. The rotor operates in the water, but the stator is completely protected from the water by a patented rust-proof stainless steel cylinder. Since the stator is surrounded by water, the motor runs cool. Each motor bearing is separately enclosed in its own grease

chamber. Re-greasing of the bearings is required only after several thousand operating hours or after two to ten years under normal conditions, and then is a very simple job.

Bulletin 265 describing the UTA submersible motor-driven American-Marsh

centrifugal pump for industrial service and for unwatering caissons, foundations and other works, may be secured from American-Marsh Pumps, Inc., Battle Creek, Michigan, by readers mentioning **CONTRACTORS AND ENGINEERS MONTHLY**.



MALL Concrete Vibrator with gas engine power unit. The same machine can be used for concrete surfacing.

### A "JACK OF ALL TRADES"

OLD STUFF, YOU SAY? LISTEN TO THIS!

ONE MALL power unit will VIBRATE concrete and SURFACE the concrete after the forms are stripped. You can use it, too, for DRILLING, PUMPING, GRINDING, or SAWING. How? By simply attaching the required tool for each application.

These versatile tools will earn big dividends on your next job. We'll gladly send bulletins.

### MALL TOOL COMPANY

7743 SOUTH CHICAGO AVENUE, CHICAGO, ILLINOIS

OFFICES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES



## CHECK these advantages of *Franklin AIRCOOLED* INDUSTRIAL POWER UNITS

against your present power costs. They give you some reasons for the construction industry's rapidly growing appreciation of the inherent economy of air cooled engines for industrial use.

### LOW OPERATING COST

Greater positive fuel economy is assured because of the air cooled engine's highly efficient cooling system which enables it to quickly develop more efficient and constant operating temperatures. Accurate field records show gasoline savings up to 30% over water-cooled types of power.

### LOW MAINTENANCE COST

In an air cooled engine, the expense of maintaining radiator, water pump, hose, fan belt and

other plumbing fixtures is entirely eliminated. An air cooled engine is easily serviced by any good mechanic familiar with ordinary water cooled engine practice. Its extremely simple construction and easy-access design makes for economical maintenance. For example, its individual cylinder construction alone effects radical savings in time, labor and expense.

● An air cooled engine is an all-weather engine because it will not freeze in zero weather, boil or overheat in extreme heat or high altitudes, —and requires no anti-freeze. Frozen and cracked engine blocks are a thing of the past, —constant draining and refilling is no longer required, —nor is it necessary to locate your unit close to a water supply.

● An air cooled engine weighs less because it has no radiator, plumbing system or water. The use of aluminum alloy in cylinder heads and other mechanical parts adds to its lighter weight without any sacrifice of ruggedness. In trucks, especially, this saving in weight is important because it allows for greater payload.

If your problem is one of power for road machinery, trucks, industrial equipment, agricultural machinery, saw mills, compressors, pumps or other industrial use, —write for Bulletin No. 9E and learn how you can cut your power costs.



**AIR COOLED MOTORS CORPORATION**

Executive Office • 115 MADISON AVENUE  
NEW YORK, N. Y.

• GORHAM, N. Y.

## JACKSON VIBRATORS

### VS-E1 VIBRO-SPADE SHORT FLEXIBLE HOSE HANDLE

An electric concrete vibrator of the internal type, 4" in diameter, for general work.

The VS-E1 shown is equipped with a short, flexible hose handle making it especially efficient for puddling concrete at transverse joints and along side forms in paving construction.

Tunnel contractors like this short handled model... it is easy to lift and handle through form openings.

Several types of quickly interchangeable handles, both rigid and flexible, equip the VS-E1 for practically all placing applications.

Write for full information

**ELECTRIC TAMPER & EQUIPMENT CO.**  
LUDINGTON, MICHIGAN



# The Covered Bridge Reincarnated in N.H.

**Responding to Demands of Citizens, State Builds New Structure to Replace One Destroyed in 1936 Flood**

† THE NORMAL procedure when an old wooden bridge is destroyed is to replace it with a modern steel or concrete structure. When the State Highway Department of New Hampshire began plans for replacing the old covered bridge over the Contoocook River between Hancock and Greenfield, swept away in the flood of March, 1936, the program called for a concrete structure. The citizens objected so vigorously that a new wooden covered bridge was designed and finally accepted for Federal Aid by the U. S. Bureau of Public Roads. The new design makes use of the latest ideas in timber construction but the actual method of erecting the bridge, with a minimum of equipment, closely paralleled the methods of the early covered bridge builders. The entire structure, except the roof, floor and railing, is of Douglas fir.

The new covered bridge which was started on April 27, 1937, has an 84-foot span and carries a 20-foot roadway. There are five panel points and the two end frames on 14-foot centers. The panel points were numbered successively from 0 to 6 beginning at the Greenfield end. Panel points 0 and 6 are the portals and panel point 3 is the center of the structure. The frames for the intermediate panel points 1, 2, 3, 4 and 5 have 8 x 10-inch single vertical posts carrying a top truss. The top and bottom members of the trusses are each composed of two 3 x 8's with pairs of 3 x 8 diagonals. The bottom-truss floor beam is composed of top and bottom members, each of double 3 x 12's with pairs of 3 x 8's for diagonals except for the end diagonals which are pairs of 4 x 12's. The stringers, which are creosoted, are 6 x 16-inch. In addition to the stringers being creosoted, every member of the structure within 5 feet of the bearing rocker seat was creosoted by hand brushing.

The three middle panel points, 2, 3 and 4, are the same as those adjacent to the end panel-point frames except that the vertical posts are 10 x 12's. The end or batter posts are composed of 6 x 18-inch lumber while the diagonals between panel points 1-2 and 4-5 are composed of two 3 x 14's and the diagonals between panel points 2-3 and 3-4 are two 3 x 12's.

The house framing consists of 2 x 4's spliced and 4 x 4's spaced 2 feet 2 inches on centers for the sheeting while the rafters are 2 x 6's and the roof trusses are pairs of 4 x 6's at each panel point bolted on either side of the sway braces. Welded-steel knee braces were placed at the top of each panel point and make one of the gestures toward modern construction in the entire structure. The roofing is Certain-teed asphalt thick-butt shingles. The sheeting and roof boards are 1 x 6 spruce lumber. The entire outside of the structure is painted with two coats of creosote applied by hand brushing. No paint is used inside.

## Erection

A light pile falsework composed of saplings cut locally was erected on the bottom of the Contoocook River to assist in the construction of the bridge. Work on the bridge proper was started by assembling the bottom and top sway braces or wood trusses in a yard at the Greenfield end of the structure. These frames were then rolled to the bridge site so that the bottom of the frame was

at the panel point. Then the top frame was similarly laid on the falsework and connected up by the panel-point posts. The whole frame was then raised as a unit, using a rope pulley and hand winch connected to a deadman at the Hancock end. The frame was then guyed in place. No. 5 panel-point frame was first erected, followed by No. 4, and then the top and bottom chords were placed. Inasmuch as the top of the bottom chords have both inside and outside members, only one was connected up during erection to brace the panel points, alternating across the bridge.

The portal, which is twice as heavy

as the panel points, was assembled on the approach fill with the top chord attached and then pulled up and pinned to No. 1 panel point. The entire assembly of the bridge is bolted, except the housing which is vertical  $\frac{7}{8}$  x 8-inch No. 1 fir boards nailed.

The flooring was laid across the 6 x 16-inch floor stringers. The original design called for three toothed rings in each 6 x 6 floor timber between stringers but, the teeth of the rings being dull, it was practically impossible to force the 6 x 6's together without the use of an elaborate hydraulic jack installation. The requirements were then changed and one toothed ring placed in each 6 x 6 between each pair of stringers. The 6 x 6's were forced together with six hand-operated Swett screw jacks. The use of the toothed rings created a laminated flooring. Teco rings were used in grooves at every connection of framing timbers



C. & E. M. Photo  
H. M. Thibodeau (Left), in Charge of the Covered Bridge Job, and Willibert Gasmache, Carpenter Foreman

throughout the structure.

## Abutments

The abutments were poured to bring  
(Continued on page 35)

# HERCULES

## 8 FT. TIRE PACK

### FOR SHORT WHEEL-BASE TRUCKS

# Eliminates the Problem of Carrying- SPARE TIRE, TOOLS, FLARES, SHOVELS ETC.

## NO ADDED MOUNTING HEIGHT

Hercules scores again with another important advancement in dump body engineering. Now it's the "Tire Pack"—the most modern dumping units for Today's 1½ and 2 ton trucks. They're 8 ft. long and in capacities of 2 or 2½ yds.—with perfect load distribution. Note the heavy rub rails, side braces and under body construction.

Due to ingenious design and construction a locker is provided for the spare tire and a spacious compartment built in for tools, flares, shovels, etc. Both are under the body—NO PAY LOAD SPACE IS SACRIFICED—NO MOUNTING HEIGHT IS ADDED. Any size tire up to an 8.25-20, mounted on wheel, can be carried. Tire and tool compartments are theft and weather proof and easily accessible.

Body and hoist are constructed and sold only as a single unit.

The Hoist is the Hercules 16-T Super Power "Center-Lift" with 6 inch cylinder. It embodies all the many proven "Center-Lift" features that have made Hercules Hoists the Standard of Comparison. A 7-inch cylinder is also available—this is the Model 17-T Hoist.

## TAIL GATE LEVER

and control rod is mounted on hoist frame. It is within easy reach of operator at all times—never up in the air, out of reach.

## HERCULES STEEL PRODUCTS CO.

GALION, OHIO, U. S. A.



## Well-Planned Layout For N. Y. Subway Job

(Continued from page 2)

of the yard measures approximately 28 x 45 feet and is driven 65 feet through bad material. The first 45 feet were through fine sand with much water. In carrying down the shaft 8 x 15-inch H beams were driven as master piles on 8-foot centers to rock. These were braced at the top with 14 x 14-inch H-beam wales with a second tier of bracing 15 feet from the top and the third sloping with the Manhattan schist.

The space between the master piles through the sand is filled with horizontal or interpile sheeting of 4 x 8-inch timber, with 1½-inch openings plugged with gravel. This method is used extensively by this contractor as it permits ready drainage in a natural manner. In carrying down the shaft through sand a 4-foot berm was maintained on all four sides, with a trench about 3 feet wide and 2 feet deep at the edge of the berm, giving a rectangular drainage channel. Short vertical H beams were driven at the edge of the berm carrying lighter weight horizontal sheeting as described above. This permitted the berms to dry out and made it possible to excavate the sand in the dry. In this manner, at least 2 feet of ground was kept dry at all times and at one corner of the drainage channel a free-draining sump was maintained. These free-draining sumps will be described in detail in the second article on open-cut excavation, as they were used extensively in that work.

A heavy covered stairway 5 feet wide with every tread protected with Ferulin safety tread is carried down two sides of the shaft. This stairway is sturdily built, with 7½-inch risers and 10½-inch treads mortised into the 4 x 12-inch stringers and tied together with long bolts. The top and side of the stairway are protected with corrugated galvanized iron sheeting carried on 4 x 6 posts and a double 2 x 4 hand rail is carried on both sides of the stairway from top to bottom.

### Compressed Air Layout

The compressor house for both high and low-pressure air is not located on the street. The contractor took advantage of the large unused section of the mezzanine at the north end of the 4th Street station of the City Subway and there installed the complete compressor equipment and transformers. At the south end of the compressor line are two Ingersoll-Rand units driven by Westinghouse motors and furnishing air at 100 pounds pressure. Next to this is an I-R compressor driven by a Westinghouse motor delivering air at 30 pounds for the tunnel-in-air operations. A second low-pressure air unit is belt-driven by a 150-hp General Electric motor and the third low-air machine is a Sullivan angle compressor driven by a General Electric motor. Every machine in the compressor section, as well as the other operating sections on the mezzanine, is marked with a stencil so that there is no doubt of the function of the particular machine or of the switch which controls it. The switches are all General Electric and Bull Dog Electric Products Co. units.

The low-pressure air is delivered to two low-pressure headers and thence to two after-coolers which reduce the temperature of the air to make the tunnel operations under compressed air more comfortable. There are also two after-coolers on the high-pressure air lines. The air intake is in a lot on the west side of Sixth Avenue, where a 4-foot pipe extends 20 feet above ground level and the top of which is protected with a canopy and a wire screen. A silencer is

built into the air line. Wherever electric conduits cross the floor from the switches to the motors driving the compressors, wooden ramps are provided as a safety measure to prevent laborers, operators and visitors from tripping over the conduits.

### Suspended Air Line

One of the distinct novelties of this job is the handling of compressed air on the street. Inasmuch as Sixth Avenue, with its elevated structure, is normally congested anyway, and the subway operation has added cranes and trucks, the contractor felt it desirable to eliminate portable air compressors from this job entirely. This meant carrying compressed air at 100 pounds pressure from the compressor house on the sub-

way mezzanine for approximately ½ mile. As both sides of the street at the curb line were occupied by gas mains the contractor arranged to have the compressed-air line carried beneath the elevated railway structure entirely out of the way and not interfering with traffic. Timbers of 6 x 6 lumber were set on the bottom flange of the elevated floor beams and wedged, spanning the distance between the beams. Then stirrups are used to suspend a 6-inch steel pipe with Dresser couplings from wood timbers, thus completely insulating the air line from the steel elevated structure. At several points in each block 1½-inch pipes are tapped to the air main and carried down the elevated railway pillars on the side away from oncoming traffic. Lubricated plug valves

on these pipes threaded to receive the rubber air hose make it possible to attach any pneumatic tool quickly and be sure of an adequate supply of air for its operation.

### Cooling Water

Inasmuch as at least 100,000 gallons of water is required daily for cooling the compressors and for use in the after-coolers, the contractor's water bill would be tremendous if city water were used and wasted. Therefore a cooling tower, 25 feet square and 14 feet high, was erected in the contractor's yard between the Board of Transportation field office and the hoist shed. Water from the cooling tower flows direct to the compressors and then by gravity to a

(Continued on page 40)

## FROM CLEARING

Down go clearing costs as this LO, equipped with bulldozer and Carco winch, pulls out big stumps and trees at Port Angeles, Wash. Once the clearing is done, drawbar, winch and bulldozer are ready for hauling, hoisting, etc.

(Below) Here a New York contractor uses a Flough loader mounted on a Model M for loading topsoil—120 3 1/2-yard loads in 8 hours. A handy, low-cost outfit for digging basements, cleaning ditches, sloping banks, backfilling, etc.



LO's and Gar Wood scrapers cut accurately and spread evenly, thus reduce finishing time on this Mississippi highway job . . . and going or coming the LO's gain extra trips by moving faster in the cut, on the fill and traveling.

(Right) Backfilling around culverts and over embankments is easy when you use an L and Continental scraper, as this Iowa contractor does. No extra equipment needed—the scraper picks up the load in the cut, backfills it where needed.



INITIAL COST  
WORKING SPEEDS  
UPKEEP COST  
TIME LOSSES FOR REPAIRS  
STARTING TIME  
COST OF FUEL PER GALLON  
COST OF LUBRICATING OIL  
WORKING LIFE  
TRADE-IN VALUE



## Giant Concrete Dam To Be Built in Calif.

One of the largest construction jobs ever undertaken in California has been advertised for bidding by the U. S. Bureau of Reclamation, to consist of the construction of Shasta Dam and power plant on the upper Sacramento River near Redding. This dam, which will be the second largest concrete dam in the world, exceeded in height only by Boulder Dam and in mass only by Grand Coulee, will back up the waters of the Sacramento, Pit and McCloud Rivers to create a conservation reservoir with a storage capacity of 4,500,000 acre-feet which will be used for improved irrigation, flood control, navigation, salinity repulsion and power generation.

According to the official call for bids, the work will include excavating about 3,215,000 cubic yards of earth and rock to prepare a foundation for the dam; placing 5,610,000 cubic yards of concrete and 26,000,000 pounds of reinforcing steel in the dam and powerhouse; and installing 13,600,000 pounds of large penstock and outlet pipes, 8,000,000 pounds of small tubing for cooling and grouting, and 12,870,000 pounds of steel gates and control mechanism. Other items include over 1,600,000 cubic yard of rock and earth fills and 1,500,000 cubic feet of pressure grouting.

The structure has been designed as a gravity-section concrete dam with a slightly curved axis, 560 feet high, 3,500 feet long on the crest and 580 feet thick

at the base. It will have a 360-foot overflow spillway in the center, fifteen river-regulating outlets through the dam, and five 14-foot in diameter penstocks leading to a 350,000-kilowatt power plant below the dam on the west bank of the river.

## Well-Known Dealer Dies

John A. McDivit, President of the Henry H. Meyer Co. of Baltimore, Md., distributor of construction equipment, died suddenly at his home on March 29, at the age of 63. Mr. McDivit, who had been President of his company for 35 years, was well known in the equipment distributor field and was an active member and former officer of the Associated Equipment Distributors.

## Little Rock Underpass Removes Traffic Hazards

(Continued from page 1)

pass of sufficient size to carry flood water of Rose Creek, which crosses West Seventh Street at this location; the installation of a 30-inch storm sewer about 1,500 feet in length for draining the underpass; the diversion of a 36-inch sanitary sewer; and rearrangement of utility lines. The completed project provides a 40-foot roadway with a sidewalk on each side.

The realignment of West Seventh Street eliminates an abrupt offset in the old street which occurred at the grade crossings, the proposed new alignment providing an easy approach to the underpass on 3-degree curves from both the east and the west.

The Chicago, Rock Island and Pacific structure consists of rigid steel frame design, two frames for each track with cross beams carrying a concrete-filled steel-grid floor slab for retaining track ballast. Construction procedure called for all train movement over a single run-around track until such time as half of the permanent structure could be completed, to which trains were then diverted while the other half was constructed.

The Missouri Pacific structure, where several feet more headroom was available, was designed of straight simple-span deck-plate girders. In its construction it was required that both tracks be kept open for train traffic at all times during the work, which necessitated the use of a false trestle to permit excavating beneath the tracks. The deck spans were built on false bents, one span on either side of the double track and, when completed, moved into place during the interval between the passage of trains.

Retaining walls along the street were topped with concrete hand railing to guard a walk and driveway constructed along the upper level for serving abutting property. The retaining walls along the east approach are of sufficient height to exclude from the underpass the flood water of Rose Creek.

Underpass and foundation excavations were in disintegrated shale having a strata inclination of about 60 degrees from the horizontal. The contractor faced a difficult job in removing this material, as heavy blasting was not permitted on account of the proximity of a large lumber mill, dwellings, and other buildings.

All concrete was furnished by a local ready-mix contractor and delivered to the job in 2-yard Rex truck mixers.

## Personnel

The project cost a total of approximately \$215,000. J. H. Knott was Resident Engineer for the State Highway Department and L. W. Boyd, Superintendent for the contractor.

## Electric Saw Added To Portable Tool Line

A recent addition to its line of portable electric tools, made by the Van Dorn Electric Tool Co., Towson, Md., is the No. 35 electric trim saw. This unit weighs only 11½ pounds, is compact in construction and well-balanced for ease in handling. It operates on alternating or direct current, 110 volts. Its overall length is 14 inches and the maximum vertical depth of cut is 1¾ inches.

The complete line of Van Dorn portable electric tools, including drills, wrenches, screw drivers, saws, grinders, sanders, and accessories, is described in the 1938 Van Dorn catalog, copies of which may be secured direct from the company by mentioning this magazine.

# FINISHING... CUT YOUR JOB COSTS WITH *Faster Power*

Gain on item after item—from initial clearing to final blading—by using faster-moving Allis-Chalmers equipment. With A-C tractors you get plenty of reserve power for tearing out stumps and rocks, for loading big-capacity scrapers in tough going, and for quick grade climbing. Instant starting, quick pick-up, more and higher speeds, easier handling—in short, **FASTER POWER**, bring you increased yardage estimates and greater profits at the month's end. With Speed Patrols, you get more effective blade pressure and extreme accuracy together with greater speed for finishing work. And lower costs from clearing to finishing. Figure to win and keep profitably busy by using **FASTER POWER**

SEE YOUR  
ALLIS-CHALMERS  
DEALER..

GASOLINE AND CONTROLLED IGNITION OIL TRACK-TYPE TRACTORS FROM 32 TO 80 DRAWBAR H. P. . . TANDEN AND SINGLE DRIVE SPEED PATROLS . . DRAWN BLADE GRADERS . . INDUSTRIAL WHEEL TRACTORS . . STATIONARY POWER UNITS FROM 31 TO 102 BRAKE H. P. TWO, FOUR AND SIX-WHEEL SCRAPERS, BULLDOZERS, TRAILBUILDERS, LOADERS, WINCHES AND OTHER ALLIED EQUIPMENT

More effective blade pressure and correct speeds (from 2.3 to 18 M.P.H.) for every job—digging, finishing, oil mixing, scarifying, grading—make the Speed Patrol the choice of this Wisconsin contractor.

# ALLIS-CHALMERS

TRACTOR DIVISION—MILWAUKEE, U. S. A.



## Bond County, Ill., Highway Projects

**Machines, Construction and Plans "On the Board" Reported by R. O. Young, County Supt., in Interview**

† THE BIGGEST job in Bond County, Illinois, last year was the consideration of the right-of-way for the new four-lane highway to be built by the State which will replace the existing crooked alignment and poor pavement on U. S. 40 across the county.

In the nine townships of the county there are 655 miles of roads of which 130 miles are State-Aid roads taken care of principally by the county. The funds available for the county work consist of about \$15,000 direct county road tax, \$2,600 annually refunded on the Section 15D money spent by the county as the State's share of State-Aid expenditures in the past, and about \$20,000 from the one cent of the gas tax given pro rata to the counties.

The county highway equipment for maintenance consists of a 3/4-yard Insley convertible shovel, a Caterpillar elevating grader with a 36-inch belt pulled by a Caterpillar Fifty diesel tractor, an Adams 12-foot grader and an Allis-Chalmers 12-foot patrol grader. An Allis-Chalmers Model K tractor completes the heavy equipment. In addition there are one Ford, one Chevrolet and one Dodge truck, the two former with dump bodies and the last with a pick-up body. The townships each have their own road maintenance equipment in addition.

During last year the county was particularly fortunate in securing a number of WPA projects which have added greatly to the improvement of the county highway system. A total of 22 miles was graded, gravelled and oiled and 41 miles have been gravelled. In addition about 9 miles of road have been graded and gravelled to state specifications. The WPA work has simply been improvement of the existing road with no expense for plans which, in the case of work to state specifications, cost from \$200 to \$300 per mile.

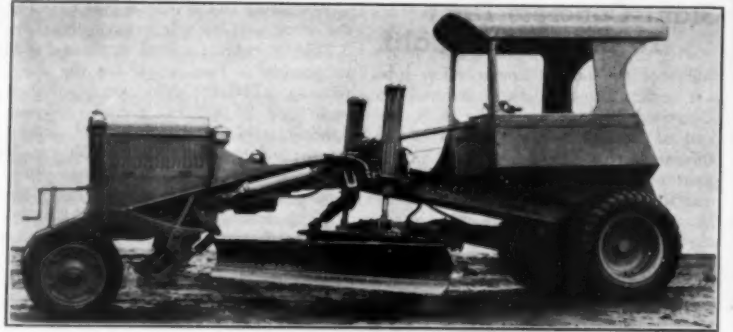
R. O. Young is County Superintendent of Highways for Bond County, Ill.,

with headquarters at the County Court House, Greenville, Ill.

### New Motor Graders With Built-In Power

One of the features of the new Huber No. 4 Superior motor graders, recently announced by the Huber Mfg. Co., Marion, Ohio, is its departure from the conventional design of motor graders. On the Huber Superior grader the circle and blade assembly is pushed, bulldozer fashion, from the heavy rear-axle housing, as opposed to the usual method of pulling this assembly from the front end.

Another feature is that the power plant is built into the grader as a unit, with the 6-cylinder engine, radiator and speed-change transmission mounted at the front and the power transmitted to the rear-axle reduction gear through a propeller shaft. With the engine in front, the entire wheelbase is available



The New Huber No. 4 Superior Grader

for a blade base, and the controls and operator's position are placed midway between the "rear-control" and the "center-control" stations of conventional graders.

The No. 4, which has full hydraulic control, has five forward speeds and two speeds reverse. High road clear-

ance and a folding scarifier are other features of this grader.

A complete description of this motor grader is contained in a 16-page booklet which may be secured by interested contractors and state and county highway engineers direct from the manufacturer.

## IN NATION-WIDE TRUCK POLL

OWNERS OF LOW PRICE TRUCKS

# GUESS DODGE PRICE UP TO \$135 MORE

## ...Yet Dodge is Priced with the Lowest!



**So Much Extra Value in Dodge Trucks... That Buyers from Coast to Coast Over-estimate Price**

A RECENT national poll of truck buyers reveals astonishing price news. Questioned from coast to coast, hundreds guessed wrong on the price position of America's low-priced trucks. Many answered that they believed Dodge trucks "cost up to \$135 more than the others." Yet Dodge is now priced with the lowest!

**Best Proof of Extra Value!**

Maybe we have told America too convincingly about the sensational extra-value features built into the new 1938 Dodge trucks. Perhaps people simply can't believe that Dodge can give so

much extra for your money. Yet it's the truth!

Dodge has genuine hydraulic brakes and any truck driver will tell you they are the best. Dodge has four piston rings instead of the usual three. Dodge has roller bearing universals, exhaust valve seat inserts, Amols steel springs and axle shafts. Anywhere you look... in the cab, under the hood, from front bumper to rear axle... you will see feature after feature, that obviously indicates "extra-quality" construction.

**Test a Dodge... Be the Judge!** Possibly you, too, have thought of Dodge as "worth more"... "higher priced." Today, in most cases, there is only a few dollars difference in the prices of the low-priced trucks. And Dodge is priced with the lowest!

Remember, Dodge makes a truck to fit your needs in its complete line ranging from 1/2-ton commercial cars to heavy duty trucks. So, before you buy any truck, ask your Dodge dealer to send a 1938 Dodge truck for you to try. Phone him today.

Tune in on the Major Shows Original Amateur Hour, Columbia Network, every Thursday, 8 to 10 P. M., Eastern Daylight Saving Time.

This advertisement endorsed by the Engineering Department, DODGE Division of Chrysler Corporation



Hundreds of truck buyers from New York to California were asked in personal interviews to estimate truck prices in the low-priced field. A surprising percentage over-estimated the Dodge truck prices.



Many buyers over-estimated Dodge truck prices \$100 and more. When told Dodge prices, some immediately checked on the phone with local Dodge dealers. The answer they got was, "Dodge is priced with the lowest!"



**NEW DODGE 1 1/2-TON DUMP**—6-Cyl., "L" Head Engine—126 1/2" Wheelbase. Built to stand up under the most punishing service... yet save money! 19 "econ-o-meters"—priced with the lowest!



**NEW 1938 DODGE 3 1/2-TON PICKUP**—6-Cyl., "L" Head Engine—120" W. B.—All truck... and built to haul bulky loads at a saving. Packed full of quality features that cut operating costs. See your Dodge dealer.

**PRICED WITH THE LOWEST!**  
DODGE CHASSIS PRICES  
DELIVERED IN DETROIT  
Including Federal Tax.  
(Local, State Taxes Not Included)

**1 1/2-TON \$475**  
116" W.B.  
CHASSIS  
Price includes front bumper, spare tire, hub and tire lock.

**\$604**  
133" W.B.  
CHASSIS  
Price includes front bumper.

Other models, including 1/2-ton, 2-ton and 3-ton, at correspondingly low prices. FOR DELIVERED PRICES IN YOUR LOCALITY SEE YOUR DODGE DEALER... Budget terms to fit your needs.



**WRITE TODAY** for your copy of a brand new colored folder with pictures and descriptions of the wide assortment of special Trailers Fruehauf manufactures for Road Builders, Contractors, Municipalities.

#### ALL TYPES

Carryalls, Dump Trailers, Pole Trailers, Gravel Spreaders, Road Oilers—you'll find these and more in this informative, helpful broadside. Write today. Just ask for our new **CONTRACTOR'S FOLDER**. It's free. No obligation.

World's Oldest and Largest Manufacturers of Truck-Trailers  
**FRUEHAUF TRAILER COMPANY**  
10928 Harper Avenue Detroit

**FRUEHAUF TRAILERS**

"Engineered Transportation"





A Browning Truck-Crane Owned by Ellsworth A. Sylvester, Inc., of Los Angeles, Handling Steel for an Oil Derrick

### A New Two-Stage Portable Compressor

The new Aero-2-Stage air-cooled portable air compressor recently announced by the Worthington Pump & Machinery Corp., Harrison, N. J., is a compact, smooth and convenient compressed air plant, clutch connected to a heavy-duty 6-cylinder Hercules gasoline engine with self-lubricating governor.

Features of the compressor are Worthington feather valves, separate suction and discharge assemblies, line-to-line contact to eliminate noise and wear due to impact, sectional intercooler, ring-type cooling fins, balanced angle construction, separately cast cylinders, rigid drop-forged crankshaft supported by two heavy-duty adjustable Timken roller bearings, pressure-spray lubrication for the main bearings and full force-feed by gear pump to all other points, a permanent oil filter and dual suction ports each provided with an Air-Maze oil-bath air filter.

This Model 105, which has a capacity of 105 cubic feet per minute, has a variety of mountings, including skids; steel wheel, solid rubber or pneumatic-tired towabout; four solid-rubber or pneumatic-tired wheel spring trailer; two-wheel single-axle spring trailer with solid-rubber or pneumatic tires; or it can be mounted on a motor truck.

## BAKER



### BULLDOZERS

The preference for Baker Direct Lift Bulldozers and Graders is easy to explain. Direct, hydraulic lift means fewer wearing parts—no loose joints—fewer delays on the job. There is tremendous down pressure when you need it and rugged strength for the toughest jobs.



Ask for  
Bulletins  
on Baker  
Bulldozers  
and other  
Baker  
Tractor  
Equipment

**THE BAKER MFG. CO.**  
585 Stanford Avenue  
SPRINGFIELD, ILL.

### Truck Cranes Used On Pipe-Line Jobs

In the oil fields in the West, a group of contractors specializing in this type of construction has grown up. These contractors have found that powerful truck cranes can perform a host of jobs, such as digging holes, hoisting steel, pouring concrete, clearing out trees, setting stacks, and loading and laying pipe.

The standard heavy-duty Browning truck crane is being used considerably in this type of work. Many of them have been especially equipped with portable lighting plants and other equipment to facilitate night work. All of them use eight drive wheels under the crane and most of them have pneumatic tires for better traction in sand and mud. The feature of these Browning cranes, which are made by the Browning Crane & Shovel Co., 16226 Waterloo Road, Cleveland, Ohio, is the individual control of operations, making them particularly adaptable to pipe-line construction where speedy and varied performance

must be carried on continuously.

The full line of Browning truck cranes and shovels is described in literature which may be secured by those interested direct from the manufacturer.

### Revolving Scrapers

Killefer revolving scrapers, built in three different weight types and a variety of sizes for use with Caterpillar tractors, are described and illustrated in a folder available from the Killefer Mfg. Corp., 5525 Downey Road, Los Angeles, Calif.

The 60-series of these scrapers is designed particularly for road jobs, and is built in three sizes with clean-dumping bowls and simple adjustments. The 30-series is designed for use with tractors of medium power and the 20-series for light work with small tractors.

Copies of the folder containing complete information on these revolving scrapers may be secured direct from the manufacturer by mentioning this magazine.



### NEW 6" PUMP

Heavy-duty design. Ideal for wellpoint service, bridge pier holes, etc., when large capacity is required.

Compact design. Oil seal eliminating packing. Tremendous capacity—90,000 gph Automatic priming, without handles requiring adjustment. Easy accessibility.

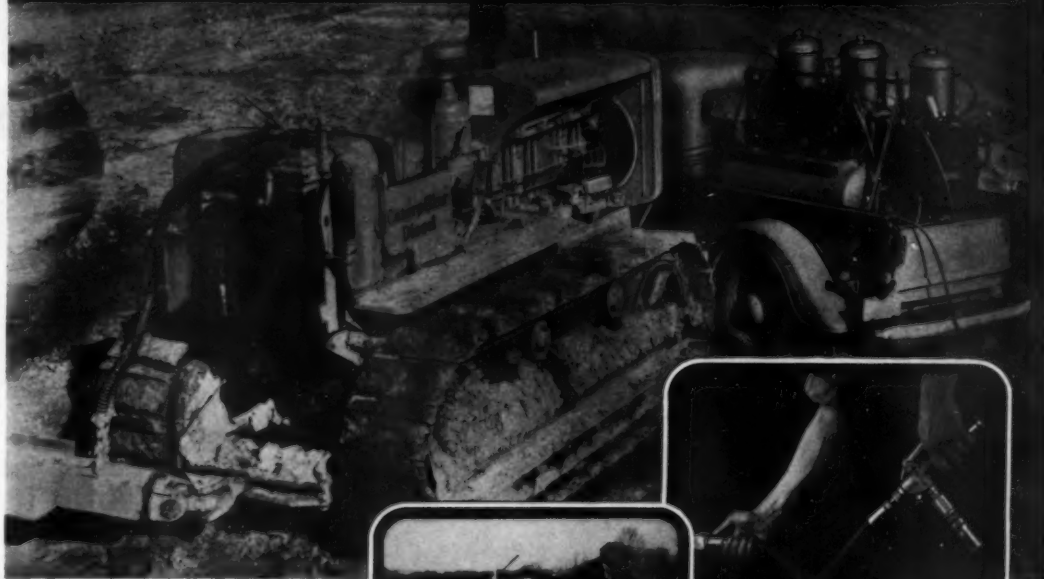
Ask for Bulletin CEM-38

**MARLOW PUMPS**

Ridgewood

New Jersey

# 2½ SECONDS... TO RELUBRICATE A TRACK ROLLER BEARING WITH ALEMITE PORTABLE SERVICE STATION!



### POWER LUBRICATION In the Field Saves Machines and Cuts Costs

OUT on the job, where every minute of delay means red-ink dollars on your cost sheet, the amazing new Alemite Portable Service Station can easily save its cost in a few months!

Think of being able to lubricate a Diesel tractor in one-third the time required by fastest former methods. Imagine the advantage of taking only 2½ seconds for relubricating a track roller bearing—of filling a transmission or final drive at the rate of 14 pounds of lubricant per minute! You can fill crankcases direct from the original oil drum. And with the same outfit you can inflate giant tires and air-clean dirt-caked motors!

Included in the Alemite Portable Service Station are two low Pressure Barrel Pumps, one High Pressure Barrel Pump, with all necessary hose and control valves... everything needed to take care of track roller bearings, gear compartments, and crank case!

Make this money-saving modern equipment build bigger profits for you this summer! Mail the coupon NOW!

ALEMITE—A Division of Stewart-Warner Corporation  
1850 Diversey Parkway, Chicago, Illinois

Stewart-Warner-Alemite Corporation of Canada, Ltd., Belleville, Ontario

## ALEMITE

REG. U. S. PAT. OFF.

WORLD'S LARGEST MANUFACTURER OF LUBRICATION PRODUCTS

Enjoy Horace Heidt and his Alemite Brigadiers every Tuesday Evening, NBC Coast-to-Coast Network, (See local papers for time of broadcast)

ALEMITE—A Division of Stewart-Warner Corporation  
1850 Diversey Parkway, Chicago, Illinois

Please give me all the facts on the new ALEMITE PORTABLE SERVICE STATION.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_  
Firm Name \_\_\_\_\_

See how easily the hand grips the control for quick, positive lubrication of track roller bearings—2½ seconds to each bearing!

This equipment makes short work of gear compartment lubrication, pumping lubricant into transmission at a rate of 14 lbs. per minute!





Applying Tar Stabilizer on a Shelby County, Tenn., Road

## Tests for Stabilizing Agent for County Road

(Continued from page 9)

### Summary

A report was made by the laboratory recommending the grade of tar best suited for this soil, quantity required, the optimum moisture of the soil-sand mix, and advising a dampening of the soil-sand mix before the application of the tar.

The data indicated that 6 per cent of tar gave the best results, combining strength with good resistance to water. An increase over 6 per cent of tar would probably tend to reduce the supporting strength of the soil. However, the high moisture resistance of the 4 and 5-per cent specimens, together with their high strength, indicated that 5 per cent of tar would be adequate. Possibly 4 per cent would have been sufficient, had this project been set up for plant-mixed construction. The optimum moisture for this soil, with 50 per cent sand added, and 5 per cent tar, was about 8 per cent based on the soil-tar mixture. The tar gallonage, per square yard per inch of compacted depth, for a 5-per cent mix was 0.476 of a gallon, equivalent to about 1.9 gallons per square yard for a 4-inch depth.

### Preparation of Road

The Altruria Road consisted of the natural soil which had been graded and drained. No road metal had previously been added. The surface was scarified to a depth of 4 inches for the width of

14 feet and approximately 2 inches of the well-graded washed sand was spread uniformly over the loosened soil.

The sand and soil were mixed with two heavy-duty blade graders, each having four rear wheels. As it had rained two days prior to the start of the stabilizing work, the soil was damp but not wet.

A 1,100-gallon capacity water truck with solid rubber tires was used to apply additional water. Owing to a leaky connection, most of the water came from this connection instead of the spray bar. Due to this, the windrows were straddled and the water was applied to the windrows and effectively dispersed by mixing with the blade graders during spreading.

The windrow of material was split and half removed to each shoulder. Two Shelby County-owned truck pressure distributors were used in hauling and applying the tar. The subgrade was given an application of 0.5 gallon per square yard of tar, and this was covered with about 2 inches of loose soil-sand mix brought in from the side windrows

by the graders. This operation was repeated until all the loose material in the windrows had been spread, using 1.5 gallons of tar per square yard.

Water was lightly applied at irregular periods owing to the length of water haul and slowness of the water truck. The weather was warm and sunny, with a good breeze blowing, which rapidly dried out the surface. At no time did the mix become sloppy, but a stiff plasticity was obtained. The soil absorbed the water readily, and no difficulty was experienced in breaking down soil lumps.

### Mixing and Spreading

No disc harrows were available for mixing, and at this stage the mix was laminated with alternate layers of rich and lean materials. The entire mix was then moved into one windrow, in the center of the road, during which operation the entire subgrade, which was damp, was planed off to a very smooth, firm, stable surface. In this operation, the soil, tar, and water were thoroughly mixed, the resultant mixture being fairly

black and stiff. The report of the Research Department showed that a satisfactory stabilization could be secured with from 4 to 6 per cent tar, and from the appearance of the mix, it was felt that 4 per cent would have been sufficient.

The mixture was then spread from the windrow over the 14-foot road width. When roughly spread, the surface was

(Continued on next page)



**110 VOLTS AC ANYWHERE!**  
With KATOLIGHT For Operating FLOOD LIGHTS, PORTABLE SAWS, DRILLS, etc.

350 Watts AC, JRA3	\$ 89.50
500 Watts AC, JR55	130.00
1000 Watts AC, 26AL	228.00

Other sizes up to 10,000 watts capacity. Also Diesel Plants, 6, 12 and 32-volt battery chargers, rotary converters, etc.

Write for circulars  
**KATO ENGINEERING COMPANY**  
Mankato, Minn., U.S.A.

# PENALTY CLAUSE ? Forget it



## Get the Insurance of WALTER 100% TRACTION

You can't argue with a penalty clause. Either you finish the job on time or else—.

So what? So be sure your trucks will see you through on time, that's what. Some don't, you know, when the going gets pretty rough. Then there's the devil to pay (otherwise known as the "party of the first part").

But you can count on Walter Tractor Trucks. Good roads, bad roads or no roads at all — somehow the Walter gets through. Of course, it's **four point positive drive** that makes the Walter like that.

Found **only** in the Walter, because of its patented automatic lock differential, it insures power on all four wheels. If one wheel loses traction and spins, its mate does not stop like a tired horse whose mate has fallen in the mud, but continues to turn under full power.

Don't lose your shirt on a penalty contract. Insure yourself with Walter Tractor Trucks.

Send for literature  
**WALTER MOTOR TRUCK CO.**  
1001-19 Irving Avenue  
Ridgewood, Queens, L. I., N. Y.



Quality of workmanship, design accessibility, speed, working range and safe load capacity are built in features that assure BAY CITY owners more yardage at lower cost. For economical, efficient operation investigate BAY CITY Machines. Write for details.

**BAY CITY SHOVELS, INC.**  
Cable address "DREDGE"  
BAY CITY, MICH.



## Local Materials and Tar for Tenn. Road

(Continued from preceding page)

given an application of 0.25 gallon per square yard of tar. An attempt was then made to give the surface the final dressing, but when late afternoon approached, the mix became very stiff and could not be spread. A small windrow of mix was left.

On the next day, which was fair and warm, the windrowed material softened and was spread. This material did not bond readily with the material spread the previous day. Also, some fresh soil was brought in, unintentionally, from the shoulders by the graders.

A perforated galvanized iron trough was made at the Penal Farm and suspended under the spray bar of the water truck in order more uniformly to apply and control the water. A light sprinkling of water was given to the entire surface, followed by an application of tar at the rate of 0.25 gallon per square yard.

The surface was then bladed a little deeper than the thickness of the layer of material left from the day before. This mixing coated all fresh soil and made the mix spread easily. The surface was bladed to a smooth finish, and the mixture appeared to be homogeneous throughout the full depth.

### Rolling and Surface Treatment

One heavy grader, having four large pneumatic tires in the rear, was kept on the road to do the rolling when the mix dried out to the optimum moisture. Throughout the entire operation, the mix was readily compacted under the equipment traffic. After a thorough rolling with the pneumatic tires, the stabilized mix was rolled with a heavy three-wheel power roller.

The thickness of the stabilized base is slightly under 4 inches. The mix contains about 75 per cent soil and 25 per cent sand with approximately 2 gallons of tar per square yard, making the percentage of tar in the mix about 5½ per cent.

After the mix had been allowed to dry out and set up for about two weeks, the stabilized base was given an application of 0.25 gallon per square yard of tar having a specific viscosity, Engler, of from 16 to 22 at 50 degrees C, and covered with the same type of sand which was added to the soil. The sand was broomed to a uniform spread and lightly rolled.

### Conclusion

This entire operation was designed to construct the most economical type of stabilized base and surface, utilizing the sand which was a product from the gravel plant.

The work of stabilizing this soil-sand mix was done entirely with blade graders, and no special equipment was used. Work could have been done more rapidly had a disc harrow, multiple-blade retread mixers, and a sheepfoot roller

been available. Traffic, which was very light, was not kept off the road during any of the time, except when the tar was actually being applied, and at no time was the road impassable or even sloppy.

This work was done under the authority of the Shelby County Commission, E. W. Hale, Chairman; Luther S. Jones and O. B. Ellis, Commissioners; and under the direct supervision of Ellie Jones, Superintendent of Highways, and H. V. Patton, County Engineer.

## Improved Features of Vibratory Paving Tube

A number of improvements in the Jackson vibratory paving tube, which is designed for attachment to a concrete-finishing machine for vibrating concrete for road paving, has been announced by the Electric Tamper & Equipment Co., Ludington, Mich., manufacturer of the tube which is sold exclusively by Jackson Vibrators, Inc., also of Ludington, Mich.

The tube consists of a 4-inch outside-diameter seamless steel tube on the rear of which is welded a 4-inch channel. The tube is in two parts, joined in the center by a saddle casting upon which is mounted a specially-designed induction motor having large unbalancing weights on its rotor shaft to produce high-frequency vibration. This motor is submersible and is so constructed that it requires lubrication or other attention only about once every six months. Each half of the tube is secured to the saddle carrying the motor by means of strong tightly-drawn clamps. Thus the vibrations are imparted to the tube without loss of power. The saddle casting is of concave shape underneath to permit the tube to clear a center strip or longitudinal joint.

Tubes are supplied for any width of pavement and adjustment is provided at both ends of the saddle casting to set the tube for a specified height of crown. The Jackson paving tube does not rest or come in contact with the side forms, but is flexibly suspended from a pair of

carrying arms which are provided with shock absorbers to prevent transmission of vibrations to any part of the paving finisher. The suspension arms are arranged for vertical adjustment, controlled by an hydraulic ram. The actuating pump is mounted on the operator's deck, permitting a quick change in the elevation of the tube to accommodate any type of pavement or reinforcing material.

**TARPAULINS** WRITE FOR SAMPLES AND PRICES  
**ROAD MATS**  
**WINDBREAKS**

CONTRACTORS SUPPLY SEALS in every state sell the Fulton line. Supply nearest city and FULTON. Tents, Tarps, and Windbreaks—anything made of canvas. Also Fulton Road Mats and Surtop. Fulton products are good and their prices are right. If your dealer can't supply, write our nearest plant or writing, samples and prices list.

**Fulton Bag & Cotton Mills**  
Manufactured Since 1870  
ATLANTA ST. LOUIS DALLAS  
MINNEAPOLIS NEW YORK NEW ORLEANS KANSAS CITY SAN

**GEARED TO MESH WITH TODAY'S JOB**

**The 27E**

**STEADY**, continuous equipment operation is the essential factor in road paving profits. Proved equipment that dovetails into the production scheme without lost time or motion can be depended on for full dollar investment value and maximum production returns.

In these times when contracts involve short mileages, the Multi-Foote 27E fits into the standard paving picture without the need for additional larger auxiliary equipment. It is geared to mesh completely with present material handling arrangements. In cases where certain jobs may warrant increased paving speed and output, two Multi-Foote 27E's combine to produce more footage and still retain unit flexibility.

**THE FOOTE COMPANY, INC.**  
Nunda New York

**For Stone** The Adnun Finish Spreaders—a low cost machine that handles any material and shapes crown or bank. Ask about it.

**For Black Top** The Adnun Black Top Paver lays any mix, any width, any thickness! The only Black Top Paver with 6 years actual service behind it. Catalog on request.

**MULTIFOOTE**  
**CONCRETE PAVERS**

**USE CHICAGO**  
**Expansion Hook Bolts and Hook Bolt Inserts**  
For securely fastening new concrete to old in HIGHWAY construction and GUNITE work.

For complete details consult your dealer or write direct to us—  
**CHICAGO EXPANSION BOLT CO.**  
140 S. Clinton St. Chicago, Illinois





Bulldozing Debris on a Steep Slope Required a Second Tractor as Anchor

## Famous Nevada Route Realigned; Improved

(Continued from page 10)

with lots of noise and several thousand yards of rock material flying through the air, not a stray rock hit the leads, with the result that the pulse beats of the line crews very soon became normal again.

Traffic over the grade was allowed to pass through while construction progressed and experienced only slight delays. During blasting operations, the route was temporarily closed but reopened quickly as enough debris was moved to establish travel lanes. Delays never exceeded more than a few hours.

Because of the steep pitch on some of the hills in this region tractor operations were highly thrilling to watch. At one point, a short distance north of Davidson's Point, a Caterpillar dragging a loaded Le Tourneau Carryall broke its hitch and for a time it looked as if the "Cat" would turn turtle. Quick action by the operator prevented a spill, the tractor was righted, turned its nose back up the hill and, after a short struggle, reached the top, picked up the trailing piece and continued working.

Borrow pits were found close to the new alignment which obviated long hauls for the fills. The imported borrow was placed 6 inches thick, watered and rolled and was used as temporary surface.

Because of the fact that the new alignment coursed through a district in which hundreds of millions of dollars in gold and silver had been mined in the past, and is still being mined, it was believed by some authorities connected with the work that new ore veins might be cut by the road builders. This, however, proved to be only a wish and not a fact. While much mineralized rock was removed to make way for the new road, assays of the material showed little commercial value, and as a result excitement subsided.

All equipment used on the job was diesel powered and excellent speed was maintained throughout. The following

equipment was in use: one Northwest Model 80  $2\frac{1}{2}$ -yard shovel, one Northwest Model 60  $1\frac{1}{4}$ -yard shovel, one Northwest Model 18  $\frac{3}{4}$ -yard shovel, four Caterpillar RD8 tractors, two Caterpillar RD7 tractors, one Caterpillar Thirty, one Caterpillar Twenty, two Le Tourneau Carryalls, one McMillan drag, six Le Tourneau bulldozers, two Le Tourneau plows, two sheepsfoot rollers, one 3-wheel roller, four 9-cubic yard Mack trucks, seven 6-cubic yard Mack trucks, one Mack 1,800-gallon water truck, one Ford 680-gallon water truck, one Ford  $1\frac{1}{2}$ -ton pick-up, one Chevrolet  $1\frac{1}{2}$ -ton flat rack truck, one Ingersoll-Rand 3-hammer compressor, two I-R 2-hammer compressors, one I-R 1-hammer compressor, one 700-gallon gasoline truck, one Ford power saw, one portable electric welder, one Kohler light plant, one concrete vibrator, one Jaeger two-bag concrete mixer, one Caterpillar Auto Patrol, and one Caterpillar 12-foot blade grader.

### Labor and Hours

Labor reached a maximum of 125

men during the peak of the construction, and was limited to 40 hours a week. Although the time limit on the job expired in February, 1938, the contractor was anxious to beat Old Man Winter, his men stepped on the gas, threw the equipment into high speed and finished the job by November 25, using a total of 175 working days.

### The New Road

Because it constitutes the shortest

route between Reno and the Comstock district at Virginia City and because of its scenic value, a decided increase in traffic has already been noted. Unless unusually severe storms strike the region during the winter, the Department of Highways plans to keep this route open all year round. While it is the main feeder road for that district, there is an optional route, 10 or 12 miles longer but on a lower level, down through Carson City and east on U. S. 50.

## New Cummer Portable Asphalt Plant

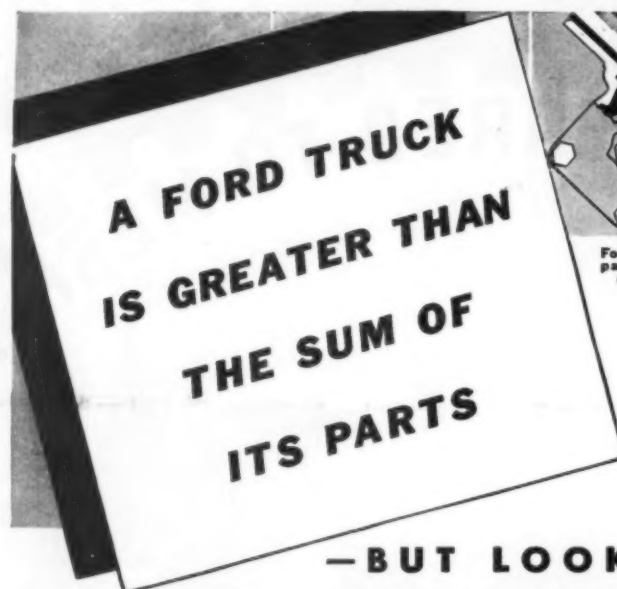
Series 1200—for Hot and Cold Mix. Equipped with the Cummer Two-Fire Dryer Cooler.

Series 920—for Hot Mix. Equipped with the Cummer Internal Fire Dryer.

Both plants are built with a new idea in lower units, for portability. Complete plant may be set up in 3-4 days. Supplied with 1,  $1\frac{1}{2}$  or 2-ton mixer.

Write for literature

THE F. D. CUMMER & SON COMPANY  
17th and Euclid Avenue  
Cleveland, Ohio



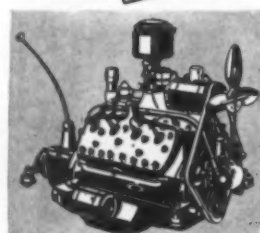
## —BUT LOOK AT SOME OF ITS PARTS!

Some truck buyers like to go over a unit part by part, and judge it on "points." A few of the features of the 1938 Ford V-8 Truck are shown here. Some are interesting because they are new improvements. Some are time-proven features which continue to be new-worthy because they represent the type of expensive design and construction which Ford is able to offer at low cost.

But—a Ford Truck is greater than the sum of all its parts. Into each truck goes the experience gained in 21 years of truck-building leadership. Back of each truck is the constant Ford ideal—to build strong, lightweight trucks that put MORE PAY IN EVERY PAYLOAD. And with each truck go the time-and-money-saving advantages of the Ford Engine and Parts Exchange Plan.

You get value far beyond its price when you get a Ford V-8.

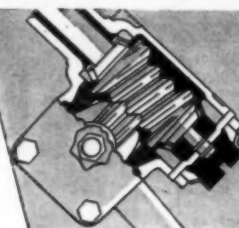
## FORD V-8 TRUCKS AND COMMERCIAL CARS



V-type 8-cylinder engine—still rolling up records for performance and economy.



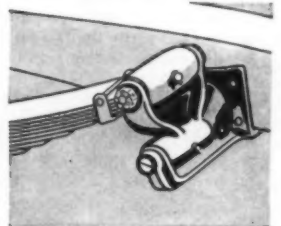
New welded all-steel cab gives extra strength, safety, comfort. 3 inches more head room.



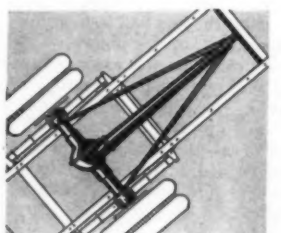
For easier driving and parking—worm and roller type steering.



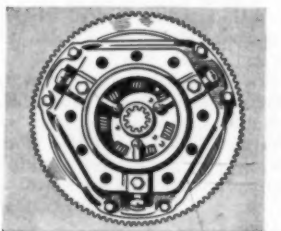
Full-floating rear axle relieves the axle shafts of supporting the weight of chassis and body.



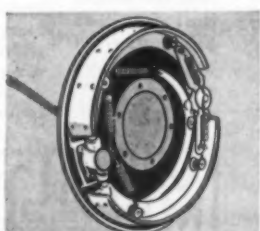
Rear springs are free-shockled at both ends. An earmark of top-quality truck construction.



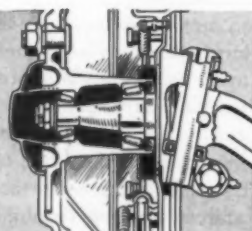
Full torque-tube drive relieves springs of driving and braking stresses.



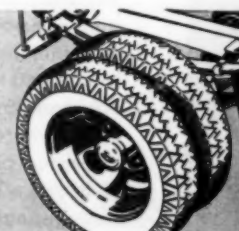
Centri-force Clutch. One of the most efficient, most reliable truck clutches ever built.



New bigger brakes—less pedal pressure—safety of steel from pedal to wheel.



Larger spindles equipped with larger spindle bolts increase the safety factor.



7.50-20 dual tire and wheel equipment is now available at slight extra cost.



ARRANGE FOR AN "ON-THE-JOB" TEST



## Concrete VIBRATORS AND GRINDERS

Write for Circular on types, sizes and prices

White Mfg. Co.  
ELKHART INDIANA



## Among the Manufacturers

**The Barber Co., Inc.**, 1600 Arch St., Philadelphia, Penna., has announced that, effective April 27, the company name has been changed to the Barber Asphalt Corp.

**Bay City Shovels, Inc.**, Bay City, Mich., has announced that Arthur W. Reidinger, formerly with the McGraw-Hill Publishing Co., has joined its home office selling organization as Advertising and Assistant Sales Manager.

**Black & Decker Mfg. Co.**, Towson, Maryland, has recently opened its twenty-third factory service branch, this one at 935 N. Illinois St., Indianapolis, Ind., which will carry a complete stock of replacement parts for all Black & Decker tools. H. F. Linder is Service Representative in charge.

**Blaw-Knox Co.**, Pittsburgh, Pa., has secured the patent rights for the manufacture, distribution, and sale of two units of road-building equipment from the Flynn Manufacturing Corp., Alexandria, La. These machines, which will be manufactured in the Blaw-Knox plant at Pittsburgh, will henceforth be known as the Blaw-Knox Road Builder and the Blaw-Knox (Flynn) Surgrader.

**The Buda Co.**, Harvey, Ill., has appointed R. K. Mangan, who has been associated with this company in an engineering and sales capacity for approximately 20 years, as Vice President in charge of advertising, domestic and export sales of diesel and gasoline engines.

**Harnischfeger Corp.**, Milwaukee, Wis., has recently appointed H. S. Strouse as Vice President. Mr. Strouse has served the Harnischfeger Corp. in many capacities, having joined it in 1920. Along with the duties of his new position, Mr. Strouse will continue to direct the activities of the Treasurer's Department.

**Jones & Laughlin Steel Corp.**, Pittsburgh, Penn., has announced the appointment of three new assistant general managers of sales, together with several promotions and new appointments in its district sales offices, and the opening of a new district sales office in Baltimore. The three assistant general managers of sales are R. T. Rowles and W. H. Wiewel, who will have general supervision over products sales departments, and H. J. Watt, who will have charge of New York City and the East with

supervision of district sales offices in Boston, Philadelphia, Atlanta and the new office in Baltimore. V. A. Jevon, formerly with the Baltimore office of the Bethlehem Steel Co., is district sales manager in charge of the J.&L. Baltimore sales office. John B. DeWolf, who comes from Republic Steel, will be district sales manager in Philadelphia, succeeding Thomas C. Ham, who is transferred to Pittsburgh to supervise the corporation's industrial training plan. Edward H. Hughes, who has been with Jones & Laughlin since 1916 and assistant manager of sales at Pittsburgh since 1934, has been made district sales manager at St. Louis, succeeding J. B. Hungate who resigned.

**Lincoln Electric Co.**, Cleveland, Ohio, has announced the establishment of a manufacturing subsidiary to be called Lincoln Electric Co. (Australia) Pty., Ltd., at Sydney, Australia, where a factory has already been purchased. Arc-welding equipment manufacturing operations will begin in a year's time.

**Littleford Bros.**, Cincinnati, Ohio, has appointed Richard G. Hext its new Advertising Manager. Though new to the equipment industry, Mr. Hext has been in the advertising business for fifteen years.

**Mack Trucks, Inc.**, Long Island City, N.Y., has reported the death, on April 14, of William Russel Edson, Vice-President of the company. Mr. Edson had been associated with Mack Trucks, Inc., since the inception of the present corporation in 1911 and had served in a number of executive positions.

**Portland Cement Association**, Chicago, Ill., has appointed J. E. Dunn as District Engineer of its Richmond, Va., office, with supervision over the work in Virginia and North Carolina, to succeed H. D. Humphries, who resigned. Dunn, who has been with the Association since 1925, was formerly with the Kentucky Department of State Roads and Highways as a junior engineer and with the Tennessee Department of Highways and Public Works as Plans Engineer.

**Sullivan Machinery Co.**, Michigan City, Ind., has moved its general offices from 307 No. Michigan Ave., Chicago, Ill., to Michigan City, Ind. The Chicago Sales Office will remain at the Chicago address.

**Timken Roller Bearing Co.**, Steel and Tube Div., Canton, Ohio, has appointed Joseph T. Ryerson & Son, Inc., to warehouse Timken Mechanical Tubing (S.A.E. 1015 steel) in territories served by Boston, Jersey City, Philadelphia,

Buffalo, Cincinnati, Chicago, St. Louis, Cleveland, Detroit and Milwaukee.

**Westinghouse Electric & Mfg. Co.**, East Pittsburgh, Penna., has assigned new duties to three Vice-Presidents and two Division Managers in a revised schedule of responsibilities announced recently. Vice President Ralph Kelly, formerly in charge of Pittsburgh district works, including the headquarters plant at East Pittsburgh, has been placed in charge of sales of the company with headquarters in the Pittsburgh executive offices. Vice President R. B. Mildon assumed management of the East Pittsburgh division, coming from Philadelphia where he had charge of the Steam and Stoker departments. Vice President N. G. Symonds will devote his time to specific customer activities in the Sales Department. Roy A. McCarty, formerly Manager of the Small Motor Division at Lima, Ohio, has been transferred to South Philadelphia as Manager of the Steam and Stoker Division and B. H. Lytle goes to Lima as Manager, transferring from East Pittsburgh where he

was a division manager.

Harry F. Boe, formerly Commercial Manager, has been appointed Manager of the Service Department, succeeding W. K. Dunlap, who retired.

**Gar Wood Industries, Inc.**, Detroit, Mich., has suffered a great loss in the death of Logan Wood, Vice President and General Manager of the organization, and brother of Gar Wood.

This company recently announced the appointment of George D. Schaeffer, who has been Chief Engineer of the Road Machinery Division of the W. A. Riddell Corp. for the past 11 years, as Chief Engineer of the Gar Wood Road Machinery Division.

### Dealer for GMC Diesels

The K. B. Noble Co., of Hartford, Conn., has been appointed distributor of the new diesel engines of 15 to 1,200 hp, recently announced by the Diesel Engine Division of the General Motors Corp., for the entire New England territory.

More profits for YOU at the end of the job with Gardner-Denver Portable Compressors and Drills

Gardner-Denver 315 two-stage water-cooled Compressor powered by "Caterpillar" Diesel engine

Using Gardner-Denver Portable Compressors and rock drills on your road jobs is insurance against interruptions and lost time. Gardner-Denver Portable Compressors are water-cooled for continuous full load in any season of the year. In addition, because of lower discharge temperatures there is little loss from shrinkage as the air cools down in the pipe line . . . and they require less horsepower per cubic foot of air delivered. Used with Gardner-Denver "S" Series Sinkers they mean swifter progress and bigger profits on your jobs. Write for complete information—it's worth while having. GARDNER-DENVER COMPANY, Quincy, Ill.

Since 1859



Gardner-Denver S-45 and S-55 Sinkers

**GARDNER-DENVER**

## Center Line ROAD MARKER

MB

Light-weight, compact, patented "moving stencil" easily attached to any car or truck. Provides clean, straight center line, free from feather edge.

### MARKS 65 to 75 MILES DAILY

on even or uneven surfaced roads—concrete or black top—using any kind of paint or hot asphalt. Two continuous bands form outline of spray. No air compressor required. Pressure is controlled by specially designed pump.



**SAFE!**  
Keeps Men off the Highways

### SPEEDS UP JOB — REDUCES COSTS

Guide on front bumper enables driver to accurately direct movement of vehicle. No men required on road for marking. The M-B Marker eliminates accidents. Reduces costs. Endorsed by engineers and highway commissioners everywhere. Write for bulletin.

Manufactured by

MEILI-BLUMBERG CORP., Box C-5, New Holstein, Wis.

**MEILI-BLUMBERG**  
AGRICULTURAL and INDUSTRIAL EQUIPMENT



## Preview of New York World's Fair April 30

On April 30 New York City was treated to a Preview Motorcade celebration to show the residents of that city what the New York World's Fair of 1939 will be like. Work at the site of the Fair near Flushing, Long Island, is progressing rapidly and the visitors on the day of the Preview were given a glimpse of what they may expect when the gates are open on April 30, 1939.

Among the exhibitors who have already signed contracts for exhibit

space are the American Chain & Cable Co.; American Radiator & Standard Sanitary Corp.; Bethlehem Steel Corp.; Firestone Tire & Rubber Co.; Ford Motor Co.; General Electric Co.; General Motors; Johns-Manville Corp.; Link Belt Co.; Petroleum Industry Exhibition Inc., comprised of the American Oil Co., the Atlantic Refining Co., Cities Service Oil Co., Gulf Oil Corp., Pure Oil Co., Richfield Oil Corp., Shell Union Oil Corp., Sinclair Refining Co., Socony-Vacuum Oil Co., Standard Oil Co. of New Jersey, Sun Oil Co., The Texas Co., and Tide Water Associated

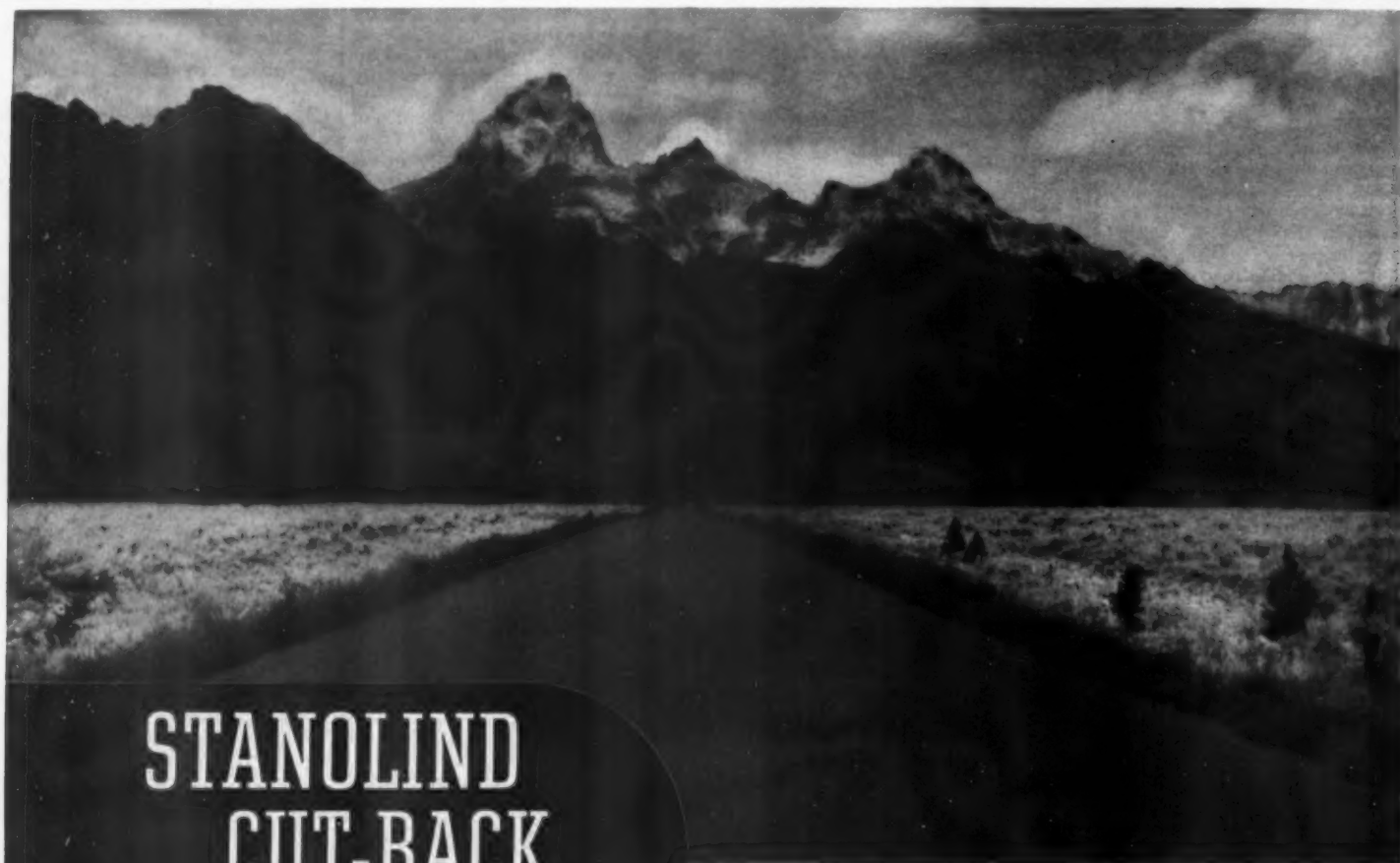
Oil Co.; John A. Roebling's Sons Co.; Timken Roller Bearing Co.; U. S. Steel subsidiaries, including American Bridge Co., American Steel & Wire Co., Carnegie-Illinois Steel Corp., Columbus Steel Co., Universal Atlas Cement Co., and Virginia Bridge Co.; and Westinghouse Electric & Mfg. Co.

### Light-Weight Engine

A new 4-cylinder horizontal-opposed-type gasoline engine, with a horsepower range from 20 hp at 1,050 rpm to 66 hp at 3,750 rpm, has recently been an-

nounced by the Air Cooled Motors Corp., 515 Madison Ave., New York City. Known as the Franklin Aircooled Model CHO-150, this new engine is adaptable to a wide range of portable equipment such as air compressors, pumps, conveyors, hoists, loaders, welders, mixers, electric generators and similar uses where light weight, short length and low height are requisites.

The engine, which has a 3 $\frac{3}{8}$ -inch bore and 3 $\frac{5}{8}$ -inch stroke, weighs 300 pounds net, is 36 $\frac{5}{8}$  inches wide, 21 $\frac{5}{8}$  inches long and 24 inches high overall, and its displacement is 150 cubic inches.



## STANOLIND CUT-BACK ASPHALT

*... highways lure  
tourists to Grand Teton Mountains*

THOUSANDS of motorists, touring the West this summer, will thrill at the sight of the Grand Teton Mountains, pictured above, from Highway U. S. 187, one of the main entrances to Yellowstone National Park.

Adding immeasurably to the enjoyment of this scene is the wide, smooth asphalt highway leading into the mountains. This road, a Wyoming Federal Aid project, was completed last year. It is a fine example of the dustless, all-weather surface secured with Stanolind Cut-Back Asphalt and the low cost method of mixed-on-the-road construction.

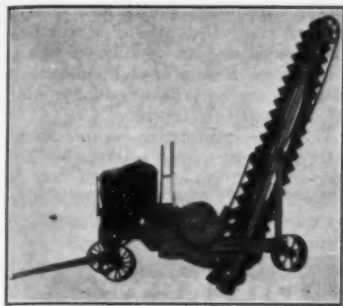
There is a type of Asphalt road construction to meet every traffic condition and almost every state or county road fund budget. Many types of Asphalt road construction will give you *more miles of improved roads per dollar spent*. The Standard Oil Asphalt representative has specifications and estimated costs on the type of construction best suited to your local conditions and purse. You can reach him at the nearest local Standard Oil (Ind.) office or by writing 910 S. Michigan Ave., Chicago, Ill.

Corp., 1938, Standard Oil Co

*Asphalt for  
every purpose*

**STANDARD OIL COMPANY**  
(INDIANA)





The New Eagle 10-20 Crusher

### New Portable Crusher

The new Eagle 10-20 roadside crushing unit, recently announced by the Eagle Crusher Co., Inc., Galion, Ohio, consists of a jaw crusher mounted on a heavy-duty steel truck which carries a folding bucket elevator and power for operating the plant. It is built entirely of heavy steel plates and can be furnished with either plain or anti-friction bearings.

The crusher has reversible manganese steel jaws which may be easily adjusted for crushing rock from 1/4 to 3 inches in size while in operation. The crusher frame is completely enclosed, protecting all moving parts. The pitman is provided with equalizing springs which carry the entire weight of the pitman and movable jaw, relieving this weight from the main bearings.

Complete information on this new crushing unit may be secured by interested contractors and state and county highway engineers direct from the manufacturer by mentioning this magazine.

### New Heavy-Duty Shovel

Built of alloy steel, all-welded, with tractor-type crawlers, the new P & H Model 555 1 1/4-yard excavator, recently announced by the Harnischfeger Corp., 4419 W. National Ave., Milwaukee, Wis., is a fully convertible machine with positive chain crowd, instant response to controls and has snap in starting, stopping and reversing.

Among the modern features of this new unit are special compensator springs to provide uniform track tension and take up slack in the crawler track; shock-absorbing chain drive to transmit power to the crawlers smoothly and dependably under all conditions; revolving upper swinging on a large

roller bearing for even weight distribution; and hook rollers to protect the center pin from all tipping strains. Machinery on the upper deck is placed behind the center of rotation, taking the place of power-reducing ballast, lessening the dead weight and reducing the strain of digging and swinging at high speeds. This arrangement also provides easy accessibility for repair or adjustment. The P & H split-second clutches, operated by automotive-type controls, respond so easily that the operator always has the feel of the load, according to the manufacturer. A double-safety boom hoist makes it impossible to drop the boom suddenly and cause damage to workmen, and is especially valuable in crane work, where loads must be carried while raising or lowering the boom. The double-cut helical gears run in an oil bath and the hoist and digging drums are mounted on the same shaft.

With gasoline or diesel engine, the P & H 555 has ample power with low fuel-maintenance cost. Other features are wide extra-capacity band brakes, vertical hand-steering wheel and P & H patented cam gear steering device, anti-friction bearings, two-speed transmission, and central lubricating stations.

### New Bucket Catalog

A new catalog, comprised of a series of individual bulletins, each describing a distinct type of excavating or material-handling bucket, has just been issued by the Wellman Engineering Co., 7012 Central Ave., Cleveland, Ohio, manufacturer of heavy material-handling equipment and of Williams clamshell and dragline buckets. The Williams power-arm type, multiple-rope, clean-up, dredging, hook-on and dragline types are each illustrated and described.

Copies of this new catalog may be secured by those interested direct from the manufacturer.

### Tractors in Construction

A new 16-page booklet containing illustrations of Cietracs on some thirty construction jobs throughout the United States has recently been issued by the Cleveland Tractor Co., Cleveland, Ohio. These show channel change, road grading, dirt-moving, work in quarries and many other types of work.

Copies of this booklet No. 845 may be secured without obligation direct from the Cleveland Tractor Co.

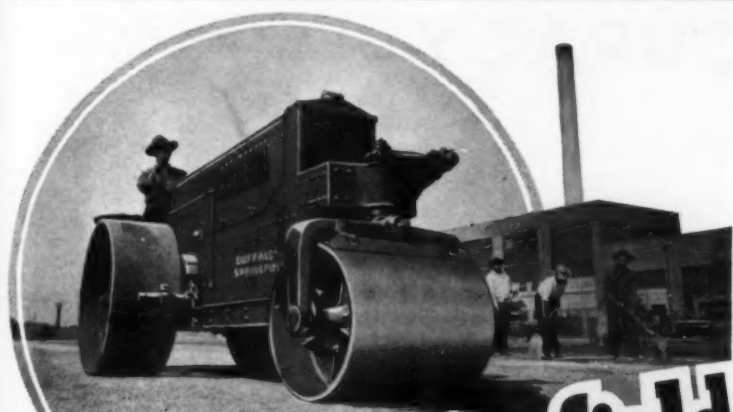


Motor graders  
Leaning wheel  
graders  
Spreaders  
Rollers  
Rooters  
Drops  
Sanders  
Maintainers

**GO THE GALION WAY — Your nearest Distributor knows Galion road machinery . . can show you how savings can be made.**

### GALION DISTRIBUTORS

- |  |   |
|--|---|
| ARIZONA, Tucson<br>Ronstad Hardware & Mach. Co.                | NEBRASKA, Lincoln<br>Highway Equipment & Supply Co.         |
| ARIZONA, Phoenix<br>The O. S. Stapley Co.                      | NEVADA, Reno<br>The Allied Equipment Co.                    |
| ARKANSAS, Little Rock<br>Lyons Machinery Co.                   | NEW HAMPSHIRE, Manchester<br>Ray Road Equipment Co.         |
| CALIFORNIA, Los Angeles<br>Smith-Booth-Usher Co.               | NEW JERSEY, Moorestown<br>C. A. Lippincott & Bros., Inc.    |
| CALIFORNIA, San Francisco<br>Harron, Richard & McCone Co.      | NEW MEXICO, Albuquerque<br>Morrow & Co.                     |
| COLORADO, Denver<br>H. W. Moore Equipment Co.                  | NEW YORK, Albany<br>The Good Rds. Machy. Co. of New York    |
| CONNECTICUT, New Haven<br>Tyler Tractor & Equipment Co.        | NEW YORK, Buffalo<br>The Good Rds. Machy. Co. of New York   |
| GEORGIA, Leesburg<br>E. B. Martin                              | NEW YORK, New York<br>The Good Rds. Machy. Co. of New York  |
| GEORGIA, Rome<br>E. E. Lindsey                                 | NEW YORK, Poughkeepsie<br>W. H. Stoutenburg                 |
| IDAHOO, Boise<br>Feenoughy Machinery Co.                       | NORTH CAROLINA, Raleigh<br>North Carolina Equipment Co.     |
| ILLINOIS, Chicago<br>Arrow Contractors Equipment Corp.         | NORTH DAKOTA, Bismarck<br>Universal Motor Co.               |
| ILLINOIS, Hoopston<br>Cox Brothers                             | OHIO, Cincinnati<br>H. F. Kelley Co.                        |
| ILLINOIS, McLeansboro<br>Graff & Hyatt                         | OKLAHOMA, Oklahoma City<br>Herd Equipment Co.               |
| ILLINOIS, Mt. Vernon<br>E. B. Epperson                         | OREGON, Portland<br>Feenoughy Machinery Co.                 |
| ILLINOIS, Rockford<br>A. H. Fuller Co.                         | PENNSYLVANIA, Carnegie<br>H. W. Findley                     |
| ILLINOIS, Peoria<br>W. S. Allen                                | SOUTH CAROLINA, Columbia<br>South Carolina Equipment Co.    |
| IOWA, Des Moines<br>Des Moines Steel Co.                       | SOUTH DAKOTA, Rapid City<br>J. D. Evans Equipment Co.       |
| IOWA, Waterloo<br>Waterloo Construction Co.                    | TENNESSEE, Chattanooga<br>Glen Mathis Co.                   |
| KANSAS, Salina<br>Salina Tractor & Thresher Co.                | TENNESSEE, Memphis<br>Mid-South Machinery Co.               |
| KANSAS, Topeka<br>Wentz Equipment Co.                          | TEXAS, Abilene<br>Goodwin, Locke, King Machinery Co.        |
| KANSAS, Wichita<br>Hi-Way Equipment Co.                        | TEXAS, Amarillo<br>Texas Machinery Co.                      |
| KENTUCKY, Frankfort<br>Frankfort Equipment Co.                 | TEXAS, Dallas<br>Browning-Ferris Machinery Co.              |
| KENTUCKY, Louisville<br>Falls City Sales Co.                   | TEXAS, Houston<br>Browning-Ferris Machinery Co.             |
| LOUISIANA, Baton Rouge<br>The Button Equipment Co.             | TEXAS, San Antonio<br>Jess-McNeal Co.                       |
| MAINE, Portland<br>E. W. Systrom Co.                           | TEXAS, San Angelo<br>Nicholson Equipment Co.                |
| MASSACHUSETTS, Watertown<br>E. W. Systrom Co.                  | TEXAS, Stamford<br>Bule's Better Machinery                  |
| MICHIGAN, Detroit<br>R. G. Mueller Inc.                        | UTAH, Salt Lake City<br>Arnold Machinery Co.                |
| MINNESOTA, St. Paul<br>Motor Power Equipment Co.               | VERMONT, Rutland<br>Lincoln Iron Works                      |
| MISSOURI, Chillicothe<br>Karcher-Wolter Equipment Co.          | VIRGINIA, Richmond<br>Richmond Machinery & Equipment Co.    |
| MISSOURI, Macon<br>Strong & Potter Equipment Co.               | WASHINGTON, Seattle<br>Feenoughy Machinery Co.              |
| MISSOURI, St. Louis<br>Webster & Hedgcock Tractor & Equip. Co. | WASHINGTON, Spokane<br>Feenoughy Machinery Co.              |
| MONTANA, Butte<br>Hall-Perry Machinery Co.                     | WEST VIRGINIA, Charleston<br>W. Va. Tractor & Equipment Co. |
|  | WISCONSIN, Milwaukee<br>Cunningham-Ortmeyer Co.             |



# Buffalo Springfield

**STRENGTH and DURABILITY** plus ECONOMY

Made in 12 Models, from 2 to 21 TONS —  
TANDEM—3-WHEEL and 3-AXLE TANDEM  
GASOLINE OR DIESEL POWERED

Full details will be sent upon request

**THE BUFFALO-SPRINGFIELD ROLLER CO**  
Springfield, Ohio, U. S. A.

### The Galion Iron Works & Mfg. Co.

Main Office & Works  
Galion Ohio

Export Division  
Columbus, Ohio





C. & E. M. Photo  
Mechanical Tamping of the Forms Insured a Good Foundation for the Heavy Steel Road Forms

## Good Progress Made On La. Concrete Job

(Continued from page 12)

absorption of the water from the concrete mix which was held as dry as possible.

The bottom course of concrete was spread by the paver operator as closely to within 2 inches of the top of the forms as possible and then the six puddlers worked it into final position. There were two men puddling the bottom course, two men cutting the sides as well as assisting in the puddling and two men puddling the second course. The two men who moved the paver mats ahead on a concrete buggy were also responsible for the handing in of the welded wire mats weighing 43 pounds per 100 square feet. The mats were divided at the center so that no steel except the bars crossed the center steel. The 27½-foot boom on the paver permitted the placing of the second course without any backtracking.

### Finishing

A Lakewood double-screed finishing machine followed the placing of the second course of concrete, leaving the surface in shape for the hand finishers. The first hand-finishing operation was the Louisiana "Flap-Jack" transverse float 22 feet long and 20 inches wide, built up of tongue and groove ½-inch lumber for flexibility. The two finishers next worked the surface with two 10-foot long-handled wooden drag straight-edges and then used the bow belt with a 10-inch 4-ply canvas and rubber belt.

One joint cutter cut all the expansion and dummy joints in the pavement, working from a 3-wheel bridge which he pulled ahead alone, as required, with a long pole and hook. The final belting, with an 8-inch 3-ply canvas belt, was done by the finisher's helper and the edger on the side that had no lip curb.

### Lip Curb

One man hauled the concrete for the lip curb from the paver in a rubber-tired concrete buggy. The same man shoveled the concrete out to the curb forms and roughed in the material. One man set the lip curb forms which were of the clamp type 3 inches high. The curb was built with a 3-inch top and 9 inches wide with a uniform slope. One man roughed in and struck off the lip curb concrete ready for the finisher who also cut the expansion and dummy joints through the lip curb.

### Curing

Burlap for the initial curing was hauled along the slab on a 6-wheel bridge and kept damp at all times. It was spread by two men who also sprinkled the burlap for the 24 hours it was on the concrete. These same men were

responsible for cleaning the adjacent slab, removing all loose concrete that might have been spilled and which would disfigure the work if allowed to remain and harden.

The following day the slab was checked with 10-foot straight-edges which themselves were checked daily with string and planed when any deviation from a true line was found. High spots were immediately removed and the slab sprinkled with 0.9 to 1 pound of sodium silicate per square yard in a 4 to 1 solution of silicate to water, using hand-pouring pots. The application of the solution was repeated if there was rain within 6 hours of the initial application. The second application, however, was only a light sprinkling of a 1 to 1 solution. The slab was opened to traffic in 14 days after poured.

A crew of ten men pulled the forms, cleaned and poured the dummy joints and applied the silicate.

### Batching Plant

The sand and gravel for the entire job was stockpiled on the shore of the Mississippi River at Kenner before the work was started. The aggregate contractor barged the materials down the river and unloaded them to the site selected by the paving contractor on either side of the Johnson batching plant. The site was ¾ mile dead haul from the north end of the job. A Northwest crane with a ¾-yard Owen bucket did all the re-handling necessary and the complete servicing of the batcher bins for the entire job without losing a moment for the batch trucks.

This contract was run with a Type A mix, using larger gravel than is usual in Louisiana. A minimum of 20 per cent of the gravel was specified to be retained on a 1-inch screen. The batches for the 7-bag mix consisted of 1,549 pounds of sand and 2,585 pounds of gravel, including the moisture content of the aggregate, on the day this work was inspected. On this contract a 1.40 cement factor was used while the minimum for the state is 1.35.

The contractor used a maximum of 24 trucks for hauling, the trucks being divided about equally between one and two-batch units. The hauling fleet was hired locally except for two trucks maintained by the contractor for setting the pace for the other units.

The cement in bags was delivered five cars at a time at a siding at the north end of the contract where two laborers

loaded the seven bags per batch onto the trucks as they drove up. An average of two and a half cars of cement was used daily.

### Personnel

The contract for paving this section of the Air Line Highway was awarded to T. L. James & Co. of Ruston, La. The work was run on a 40-hour week and completed well within the contract time with George D. Williams as Superintendent. E. A. Landry was Resident Engineer for the Louisiana Highway Commission.

## New Small Diesel Added to Buda Line

The addition of the Model 4-DT-196 four-cylinder four-cycle portable diesel engine to the line of diesel engines made by the Buda Co., Harvey, Ill., makes eleven sizes of diesels now in production by that company, ranging from 20 to 220 hp. This new model, the smallest in the line, was developed particularly for use in small trucks, power shovels and tractors and in addition has a number of other applications.

The Model 4-DT-196 has a bore of 3½ inches, a 4¼-inch stroke and a displacement of 196 cubic inches. The compactness of the engine permits interchangeability with most makes of gasoline engines of comparable power. The crankcase and cylinder castings are integral and are made of chrome nickel iron. The cylinder liners are easily removable. The crankshaft, which is carried in the bloc, is 3 inches in diameter and has 5 wide precision-type main bearings. Connecting rods are 9½ inches center on center. Lubrication is by positive force feed to all crankshaft bearings, connecting rod bearings, valve

rocker arms, and timing gears. The Lanova controlled-turbulence combustion system used on all Buda diesels is a feature of this new model and because of it, no auxiliary devices of any kind are required for starting.

Complete information on this Model 4-DT-196 is contained in Bulletins 928, 929 and 932, copies of which may be secured direct from the manufacturer by mentioning this magazine.

## Buckeye HIGHWAY WIDENING MACHINE

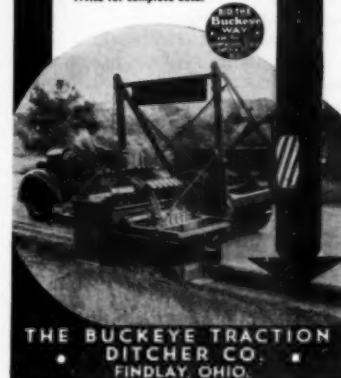
### A REAL TIME AND LABOR SAVER

This is the first tried and proved excavator for accurately and economically digging the subgrade for pavement widening construction.

At the rate of a mile or more per day, it cuts subgrade ready to receive the road materials.

Model 16-R cuts 12" to 27" wide. Model 16-R-4 cuts 12" to 48" wide—two or more cuts give any widths needed.

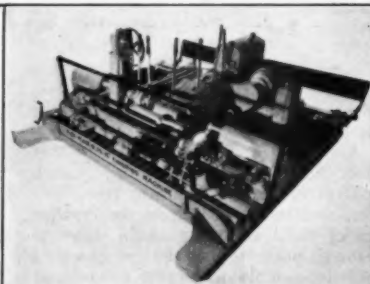
Write for complete data.



## "MORE AND MORE"

Tennessee, Georgia, South Carolina and Indiana have joined the long list of States using ribbon dummy joints. Ribbon is only ¼" thick—little shrinkage—water-tight and lasts as long as the road.

FLEXIBLE ROAD JOINT MACHINE CO.  
WARREN, OHIO



# 99% ACCURACY

A Littleford 1000 gallon Model "C" Distributor was used to build the new bituminous runways on Kell Field, Municipal Airport in Wichita Falls, Texas. Heavy asphalt was applied at ½ gallon per sq. yd. application at 350 degrees F. with a 20 foot spray bar. The engineer on the job specified exactly 340 gallons to be applied on one certain area. The instruments on the Littleford Distributor were set for the proper application and after the shot was made, the engineer checked the outage from the tank. Exactly 337 gallons had been applied—better than 99% accurate application.

Littleford Bros., 485 E. Pearl St.  
Cincinnati, Ohio, U. S. A.  
Send full data on the Model "C"



If you want accurate application, if you want precision control over the amount of bitumen you apply, use the distributor with the latest modern improvements. You can be sure of accurate application on any material, heavy or light, hot or cold, with short spray bars or long, when you see the Littleford Model "C" Distributor.



## LITTLEFORD

LITTLEFORD BROS.  
485 EAST PEARL STREET  
CINCINNATI, OHIO



## PICKS and SHOVELS

By O. E. POTTER

### Couriers of Fair's Good Will Urged to Carry Safety Message

The opportunity of carrying not only the good will of the New York World's Fair but also of taking along a message of safety on the highway was pointed out to the forty-nine good-will couriers by Dr. John Harriss, President of the U. S. Safety Society, at a luncheon held last month to celebrate the departure of the couriers on their good will tour to the forty-eight states and the District of Columbia. These couriers, who will present a model of the perisphere and trylon, the theme of the New York World's Fair, to the President and the governors of the states, were made members of the U. S. Safety Society. In his speech, Dr. Harriss pointed out that these couriers are particularly suitable representatives of the principles of the Society, which are dedicated to safety in health, in the home, at work, and on the street and highway.

This Good-Will Tour, which started from the site of the Fair in New York City on May 2, is being sponsored by the Buick and Chevrolet Divisions of General Motors, U. S. Rubber Co., Texas Co., U. S. Steel Corp., and Yale & Towne Mfg. Co., with the cooperation of the American Automobile Association, in an effort to stimulate further interest and participation in the New York World's Fair of 1939.

### Let's All Carry Safety Message

Dr. Harriss' emphasis on safety seemed a particularly important and timely one and suggested to us that we might all become self-appointed couriers of the message of safety by applying the well-known educational method of practicing it. One of the sad commentaries on the present-day traffic accident situation is that many people who put into practice every possible means of safety on their jobs and in other spheres of activity throw into the discard all safety regulations when they get behind the wheel of a car.

So let us all remember that the responsibility for safety on the highway is ours, not the other fellow's, and put into our conduct on the road the same thought for safety that we are putting into our construction jobs.

### "It's a Small World"

The routine of many of our jobs is frequently broken by that strange thing called coincidence, an example of which was recently reported by our Editor. When visiting the work of constructing a new covered bridge to take the place of an old one washed away by floods in New Hampshire, (described in this issue), the Editor met, among other people on the job, Willibert Gamache, the Carpenter Foreman.

Some thirty years ago, after spending an apprenticeship in the lumber camps of Quebec and Maine, young Gamache went to New Hampshire and was employed to move a portable saw mill from New Boston to Stoddard, N. H. The saw mill was carried on a heavy wagon hauled by a 6-horse hitch. The route over which the saw mill was pulled went over an old covered wooden bridge. Here the caravan stopped as they did not quite trust the old structure. So on the Greenfield side of the river, they halted and cut six posts to shore up the old bridge.

And that old bridge is the one being replaced by the new structure for which Mr. Gamache found himself Carpenter Foreman last season.

### Cable Guard Rail

The Bethlehem cable guard rail, made by the Bethlehem Steel Co., Bethlehem, Penna., is a wire-cable guard utilizing a special bumper-type bracket combining security and resilience. This bracket requires no special auxiliary equipment to hold the cable in place during erection. The cable fits into grooves in the clips which can be inserted loosely into the bracket, already fastened to the post by only one bolt, to allow for movement and adjustment of the cables before the bolts are fully tightened.

This cable guard rail is furnished to comply with any state specifications, and with any number of cables. The cables can be supplied with wire, either hot-dip galvanized or electrically coated to give them an extra thick and flexible coating of pure zinc.

Complete information on this cable guard, with instructions for its assembly and installation, is contained in Folder 393, which the manufacturer will be glad to send on request.

### STERLING BALANCED WHEELBARROWS



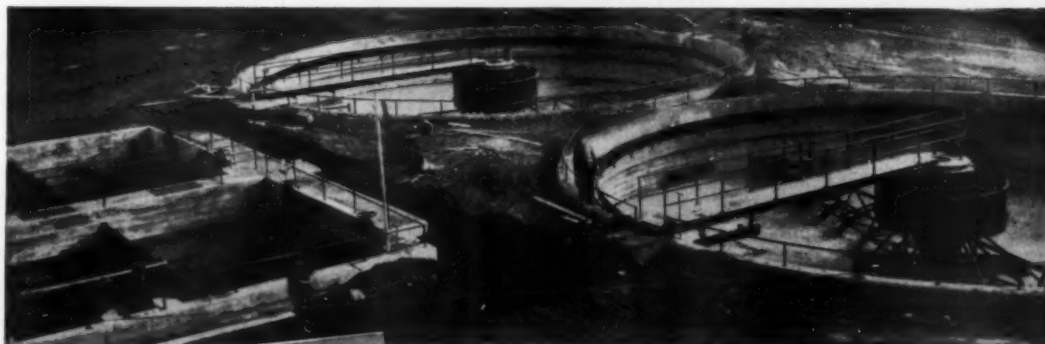
No. S-12  
Barrow—For  
Dry  
Materials

Greater part of  
load balanced  
over wheel

"Can be equipped with solid rubber tire wheel"

A COMPLETE LINE OF STERLING WHEELBARROWS AND CONCRETE CARTS

STERLING WHEELBARROW CO., MILWAUKEE, WIS.



The use of calcium chloride in the concrete made it possible to place the concrete for these tanks as one continuous job.

THE IMPORTANT  
INGREDIENT FOR  
FASTER • SAFER  
CHEAPER  
STRONGER  
CONCRETING

The Barbertain Sewage Treatment Plant is but one of hundreds of structures which have been built faster, easier and more economically through the use of calcium chloride in the concrete. Constructed during the winter of 1937-1938, the project moved along smoothly, without interruption, right through the cold-weather months.

Tests by the National Bureau of Standards have shown that the addition of 2 percent of commercial calcium chloride per sack of standard Portland cement increases the flowability of concrete by as much as 41 percent and that concrete containing this admixture attains safe strength in less than half the time otherwise required. These advantages—brought out convincingly on this Barbertain

project—permitted moving the forms so rapidly that the tanks were poured as one continuous job.

The use of calcium chloride in concrete produces a "fatter" better-lubricated mix that fills forms more evenly and more completely. Volume change is minimized, a smoother finish assured, and concrete of higher ultimate strength is secured.

The substantial savings in time and labor—plus the higher quality of concrete obtained—make the use of calcium chloride equally advantageous during summer or winter. Every season, more and more contractors, highway builders and other construction officials are proving to themselves that calcium chloride is a valuable aid to better concreting.

### WRITE FOR DETAILS

Find out what calcium chloride can do for YOUR concrete. Write today, to any of the firms listed below.

Solvay Sales Corporation  
40 Rector St., New York City  
The Columbia Alkali Corporation  
Barbertain, Ohio

The Dow Chemical Company  
Midland, Michigan  
Michigan Alkali Company  
60 E. 42nd St., New York City

MAIL THE COUPON

Main building of the municipal sewage treatment plant constructed at Barbertain, Ohio, during the winter of 1937-1938.

## CALCIUM CHLORIDE

### FOR MODERN CONCRETE CURING

CALCIUM CHLORIDE ASSOCIATION, 4145 Penobscot Building, Detroit, Michigan.

Kindly send me the bulletins checked:

☐ C. C. A. Bulletin No. 35—"Better Concrete Curing, High Early Strength and Cold Weather Concreting," including A. S. T. M. specifications

☐ Report of U. S. Bureau of Standards, (reprinted from Highway Research Board Proceedings).

☐ Data on use of dry flake calcium chloride with materials in mixer skip.

☐ Report of American Road Builders' Association Bulletin No. 42

and special information on \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_





C. & E. M. Photo  
Compacting Sand "Insulation" with the  
Trench Roller

## Ohio Road Widened With Hot-Mix Strips

(Continued from page 19)

laid and rolled and then shoulder material bladed out for the trench was hand-shoveled back against the new strip, followed by blading the remainder of the material after the first foot had been hand-placed. The shoulder material was then rolled with the Fordson. In some places the new widening material looked rather high but it was placed so deliberately so as to provide a place to take off from for the resurfacing which is to be done as soon as possible, and it was necessary to allow sufficient height to get the proper crown and still have some material over the old surface in the center of the road.

The roller wheels were wet during the entire time when they were used for rolling the hot material. The Gallion roller was somewhat related to the "side-hill pumph" that we used to hear about that had the legs on one side longer than those on the other side so that it could easily walk around hills. The wheel that ran on the road surface was of smaller diameter than the wheel that did the rolling in the trench. To compensate for this difference when traveling along the road to a new location, the entire axle was lowered by means of a wheel on the operator's platform. This roller is a joint production of the Tri-State Asphalt Co. and the Gallion Iron Works & Mfg. Co.

The mixes for the base and surface differed in composition both as regards

BASE, USING OHIO No. 3 AND 4 SLAC AND RIVER SAND		
	Per Cent	Pounds
Passing 2-inch screen, retained on 1-inch.....	20	400
Passing 1-inch screen, retained on 3/4-inch.....	30	600
Passing 3/4-inch screen, retained on No. 6.....	17	340
Passing No. 6 screen.....	27	540
85-100 A C.....	6	120
	100	2,000

TOP, USING OHIO No. 46 AND RIVER SAND		
	Per Cent	Pounds
Passing 1-inch screen, retained on 3/4-inch.....	20	400
Passing 3/4-inch screen, retained on No. 6.....	36	720
Passing No. 6 screen.....	37	740
85-100 A C.....	7	140
	100	2,000

the sizes of aggregates and the per cent of asphalt, as given above.

### Personnel

This contract for the widening of 9,207 miles of old macadam road was awarded to the Tri-State Asphalt Co. of Martins Ferry, Ohio, on its bid of \$50,495.92. Work was started on July 13, 1937, and completed within the 40 working days allowed. The job was run 8 hours a day with a 48-hour working week for the men. On the base course 20 tons of the hot-mix material laid 160 feet of base while the surface material went four times as far. For the contractor the work was in charge of J. W. Grodt as Superintendent. John E. Copeland was Project Engineer for the Ohio Department of Highways.

### A New Wagon Drill

One of the new pieces of equipment recently announced is the Thor WD wagon drill, made by the Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago, Ill. This wagon drill is adjustable as to mast and wheels and any Thor drifter drill may be mounted on it. The feeding may be either by gravity with an air hoist or by means of a pneumatic cylinder. The mast will accommodate a 12-foot steel and the pneumatic cylinder is powerful enough to handle steels in any multiple of that length with rapidity, according to the manufacturer.

A centralizer permits collaring the hole quickly and properly, and when the hole has been collared it may be released to free the drill steels and permit successive changes to be made without interference. The height of the WD, without the steel support, is 17 feet and with the support is 20 feet 6 inches. Its overall length is 10 feet 6 inches. The maximum travel of the slide is 11 feet 6 inches and the tilting range of the mast is 9 degrees above horizontal and 5 degrees past vertical.

Complete specifications on this Thor

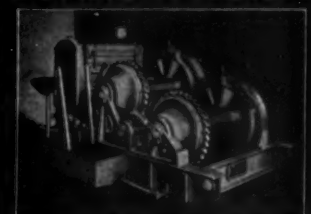
WD wagon drill are contained in Bulletin No. 3633, copies of which may be secured direct from the manufacturer by mentioning this magazine.

### New Compressor Bulletin

The features of design of the new models of Schramm Fordair compressors are described and illustrated in a new bulletin recently published by Schramm, Inc., West Chester, Pa. This 12-page booklet includes a complete presentation of all the portable and stationary models with their specifications, and features the new developments made through the use of a Ford V-8 block as a basic unit for this particular type of compressor construction.

Copies of this Bulletin No. 3815-Y may be secured by those interested direct from the manufacturer by mentioning this magazine.

## BUYING A HOIST?



### JAEGER Ball Bearing HOISTS up to 100 H.P. Offer . . .

- Finger-Tip Hoist Control (same as on \$12,000 Shovels)
- Finest Double-Row, Self-Aligning Bearings,
- Machined, Balanced Drums
- Silent Chain Drive, Compounding Brakes, etc. 1, 2 or 3 drums (Interchangeable), Gas or Electric.

Get our low prices on light 10-20 H.P. and intermediate 25 H.P. Screw Thrust Hoists. Send for Catalog H-37.

THE JAEGER MACHINE CO.  
701 Dublin Ave. Columbus, Ohio

# JAEGER



OPERATES OFF THE MIXER SHAFT—CAN  
BE INSTALLED ON ANY ASPHALT PLANT.  
APPROVED BY STATE HIGHWAY DEPARTMENTS.

# THERE IS A HUBER FOR YOUR WORK . . . .



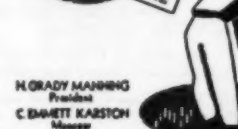
Write  
FOR NEW  
DESCRIPTIVE  
LITERATURE

Road contractors and Highway officials throughout the country know that Huber pioneered the modern roller . . . and they know, too, that Huber sets the pace for new and dependable features.

The Huber Manufacturing Co., Marion, Ohio

# HUBER Motor Rollers

FROM 5 TO 10 TONS . . . GASOLINE OR DIESEL POWER



## THE SPIRIT OF HEALTH PREVAILS AT HOT SPRINGS NATIONAL PARK ARKANSAS

Health is the keynote of all activities at Hot Springs where thousands have found the Fountain of Youth, regaining pep and vigor through the curative thermal waters of the internationally famous spa. Under government supervision, drinking and bathing in these mineral springs afford relief to sufferers from high blood pressure, neuritis, rheumatism and other disorders. At the same time the joys of an outdoor vacation, riding, hiking, hunting, are readily available.

### STOP AT THE EASTMAN HOTEL AND BATHS



At the head of the famous Bath House Row, it is convenient to all activities—yet is located in the quiet of its own private park, insuring peaceful relaxation. 500 large comfortable rooms, from \$2.50 . . . Write for literature.

H. GRADY MANNING  
President  
C. EMETT KARSTEN  
Manager





C. & E. M. Photo  
This New 3/4-Yard Shovel Handled All the Rock and a Large Part of the Dirt Excavation

## New Hampshire Builds New Covered Bridge

(Continued from page 21)

the new bridge floor 4 feet higher than the old bridge floor as a safety measure against future floods in this river. To form the cofferdams for the two abutments, 22-foot steel sheet piling was driven with a Vulcan steam hammer. It was necessary to enlarge the cofferdam considerably because of the presence of large boulders which made the driving of the sheet piling difficult. A Bucyrus-Erie steam crane with a 40-foot boom was used for driving the piles and later to handle a 1/2-yard clamshell bucket on the approach borrow.

The abutment footing is of cyclopean concrete, 15 feet 6 inches wide, 4 feet thick and 31 feet 10 inches long. The abutment proper is uniformly 3 feet 6 inches thick with 2-foot 3/4-inch wing walls 15 feet 8 3/8 inches long, ending in rubble masonry walls varying from 11 to 18 feet long at an angle of 60 degrees with the abutment proper. Asphalt expansion joints 1/2 inch thick were placed between the wing walls and the abutment. There are three counterforts on the abutment and one on each wing wall, the counterforts being 12 feet deep from the wall.

The abutment concrete was carried 12 to 14 feet below water level and the wing walls 6 feet below water level. When construction was under way and the water was high, work was carried on at a depth of 16 to 18 feet below water level and the cofferdam kept dry with a Jaeger 6-inch Sure Prime pump and a La Bour 4-inch self-primer.

After the Bucyrus-Erie machine had finished the cofferdam excavation and approach borrow, it was removed and thereafter all rock handling and dirt-moving was done with a new Marion 3/4-yard shovel. For handling the masonry stone an ingenious boom rigging was devised for the Marion. A live green oak log 16 feet long and 12 inches in diameter was wedged into the dipper with rock and hand-driven wooden wedges. As a safety measure against the hazard of this log boom breaking, a safety chain was connected to the steel boom of the machine and to the outer section of the log as shown in the illustration.

Every stone for the rubble masonry end of the wing walls was washed and scrubbed clean before being placed in the wall. The cement mortar for the masonry was mixed with a Ransome 1-bag tilter and hauled in rubber-tired wheelbarrows over the temporary bridge built for highway traffic to use during the erection of the new covered wooden bridge.

### Personnel

The new covered bridge on the Han-

cock-Greenfield Road was built by Hagan-Thibodeau Construction Co., of Wolfboro, N. H. with H. H. Thibodeau as Superintendent for the contractor and E. B. Hodgins, Resident Engineer for the State Highway Department of New Hampshire.

## New Pumps and Valves For Hydraulic Control

Among the new exhibitors at the A. R. B. A. Road Show in Cleveland in January was the Racine Tool & Machine Co., Racine, Wis., manufacturer of variable-volume hydraulic pumps and hydraulic valves for the control of various types of construction equipment. This manufacturer extended an invitation to contractors to submit their hydraulic-control problems so that Racine engineers may offer simple and economical solutions.

Racine variable-volume hydraulic pumps are extremely flexible and able to vary the volume of oil pumped in accordance with the requirements of the piston. By reducing horsepower consumption as compared to constant-volume pumps and circuits the manufacturer claims a real improvement in the economy of the system. These pumps are frequently operated to maintain a constant pressure for holding operations, such as the control of a large crane when swinging a heavy load. The manufacturer points out that the use of a Racine variable-volume hydraulic pump often saves the necessity for using two pumps, one for high-pressure low-volume and another for high-volume low-pressure requirements.

The Racine pump best suited to the usual requirements of construction equipment has an automatic governor control which permits the pump to make full delivery against resistance in the system up to the set pressure. Then the delivery is automatically reduced in proportion to the increase in pressure resistance until the maximum pressure is reached. At this point the pumping unit centers itself, maintaining the set pressure until the resistance is removed; then the automatic control immediately places the pump at full discharge.

Racine hydraulic valves are the balanced-piston type, especially designed for use in oil hydraulic systems. The end caps are interchangeable on these valves, and the hand lever may be located at either end and at any one of

four positions 90 degrees apart. The valves are packless except the stem seals, and these are subjected to exhaust pressure only. Each valve is hydraulically balanced and requires a minimum force to actuate the piston. The valves are made in standard pipe sizes, 1/4, 3/8, 1/2, 3/4 and 1-inch. In addition to the hand-operated valves, Racine also manufactures a full line of solenoid-operated, pilot-operated, cam-operated and spring-centered valves.

Complete information on Racine hydraulic pumps will be found in Catalog P-10 and on Racine hydraulic valves in Catalog V-10 which will be furnished to readers of this magazine free on request.

## Highway Lighting Booklet

The need for highway lighting as well as the recommendations to meet this need are discussed in a new 8-page bulletin recently published by the General Electric Co., Schenectady, N. Y. Illustrations and descriptions of luminaires and accessory equipment, as well as sample charts showing the performance of these luminaires in relation to unit height and street width are included.

Copies of this Bulletin GEA-1097B may be secured by interested state and county highway engineers direct from the General Electric Co. by mentioning this magazine.

## South Bend

BITUMINOUS MATERIAL DISTRIBUTOR



Purchased by Truman L. Platt, Springfield, Illinois

1908—Thirty Years' Experience—1938

MUNICIPAL SUPPLY COMPANY  
SOUTH BEND, INDIANA

## Make Your OWN Tests



Lansing K-4 Utility Cart—with Pneumatic Tired Wheels

for economy, with either or both of these handy helpers for builders, contractors, etc. F-25 barrow—capacity 4 cu. ft. wet concrete; K-4 Utility cart—6 cu. ft. dry material. Write for prices and details.



Lansing Pneumatic Tired Barrow

**LANSING**  
COMPANY

LANSING, MICHIGAN  
Chicago New York Philadelphia Kansas City  
San Francisco Boston Minneapolis

## 12 YEARS at HARD LABOR!

## NOVO HOIST still at it!

● A true veteran in length of service and work accomplished is this old Novo Drag-line Hoist owned by Mr. O. W. Lundquist of East Detroit, Michigan, pictured above.

Since March, 1925, this hoist has worked practically every working day—has taken out about 1,000,000 cubic yards of gravel and has never been down for repairs, other than the replacement of normal wearing parts as, friction blocks and brake bands.

The hoist is still in daily service and shows no signs of weakening, demonstrating the number of years service Novo builds in to their complete line of hoists.

Send for descriptive literature on the type of hoist you need.



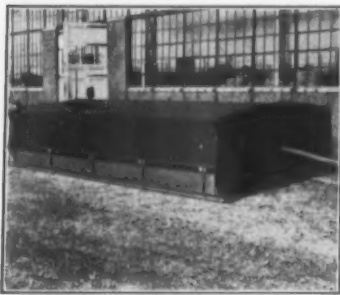
**NOVO**

**NOVO ENGINE CO.**

216 PORTER STREET

LANSING, MICHIGAN





The Gledhill Dust Hazard Eliminator

### Device Prevents Dust Hazard in Road Work

The cloud of dust present when working on a dry dusty road with any piece of road equipment presents a hazard to traffic and workmen alike. A new patented device, known as the Dust Hazard Eliminator, has recently been announced by the Gledhill Road Machinery Co., Gallion, Ohio, for use with the Gledhill road shaper.

It is a canvas structure, completely enclosing the Shaper at the top, sides, and rear and at the front end there is an adjustable opening to let in whatever air is necessary to cause the dust to flow to the rear and escape from the enclosure at a point about 3 feet above the surface, there being also an adjustable opening in the rear to let the dust escape.

The attachment is streamlined, coming to a point at the rear end about 8 feet back of the Shaper. The free air passing along each side has a tendency to close in from both sides on the end, holding the dust in a sort of drift. The air passing over the smooth top is traveling at a higher speed than the air passing through the machine, and the down draft at the rear end holds the dust at a lower level than the top of the machine, which motion of air, together with the current of air sucked in at the rear end, furrows the dust.

The attachment, which can be installed on the Shaper quickly and easily, has been thoroughly tested in some of the western states where the roads are very dry and dusty during the summer months.

### Portable Truck Scale

A portable motor truck scale, known as the Speed Weigh and designed for temporary set-ups such as construction jobs, although it is equally suitable for permanent installations if desired, is manufactured by the Butler Bin Co., Waukesha, Wis. This scale, made entirely of steel, is mounted on two 18-inch wide flanged girders located one at each end of the platform. Each girder rests on a flat level pier carried down to solid footing. With the exception of the support for the weigh-beam shelf and pillars, no other piers are required.

The scale levers are all included within the main platform girders and are hung on heavy hardened and ground steel clevises at the corners of the platform away from the dirt. Being pivotally hung, the motion of the platform provides an automatic self-cleaning action. The floor framing also constitutes the support for the plank deck and transverse members are pin connected to the outside main girder, insuring full contact between the knife edges and bearings. The beam has the main graduations in even thousand pounds and the fractional bar, graduated 1,000 pounds x 5 pounds, is mounted on the main poise so that both figures can be read at a glance. The run of the main poise is only 20 inches, requiring a minimum of motion in setting the poise to the required notch. The notches are precision milled in the solid bar; there are no springs to break, the poise seating itself automatically by gravity.

For predetermined weighing, the scale can be equipped with an over-and-under

balance indicator. This device, which is in plain view of the truck driver, enables him, after the poises have been set to predetermined weight, to add to or take from the load until the proper amount is in the truck. Where the indicator is not needed, it can easily be disconnected and the scale operated in the usual manner.

### A 15-Yard Bottom-Dump Wagon for Dirt Moving

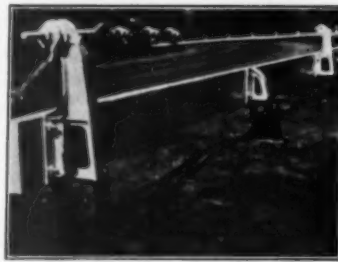
The 15-yard bottom-dump Euclid Trac-Truk, made by the Euclid Road Machinery Co., Cleveland, Ohio, is mounted on single low-pressure tires which do not cut in but utilize their expansive 20 inches of tread width in buoying up and floating the load over soft roadways and dumping areas.

This Trac-Truk is powered with a Waukesha 6-cylinder gasoline engine or a Cummins 6-cylinder diesel engine, with ratings above 125 hp and capable of delivering ample power for all heavy pull emergencies, according to the manufacturer. The body of the Trac-Truk is of rugged hopper-type construction, with full unobstructed bottom-door opening, fully reinforced. The full-width full-length bottom doors provide a clear opening 12 feet 6 inches by 4 feet 6 inches and are controlled by the patented Euclid mechanical door-closing device. This door-closing wind consists of a cable drum actuated by a wheel in contact with the left trailer tire during the door-closing operation. The wind mechanism gears are in a fully enclosed case and run in an oil bath.

The tractor part of this dirt-moving unit is 14 feet long, 6 feet 4 inches high and 8 feet 1 inch wide and the trailer is 22 feet 2 inches long, 9 feet 7 inches wide, with a loading height of 7 feet 6 inches and a dumping clearance under the rear axle of 3 feet 3 inches. Complete specifications of these Trac-Truks are contained in literature which may be secured without obligation direct from the manufacturer by mentioning this magazine.

### New Bucyrus-Erie Dealer Appointed in Alabama

The Ray-Ewbank Machinery Co., 101 Chandler St., Montgomery, Ala., has been appointed distributor for county



Dayton Guard Rail Posts

### New Guard-Rail Posts

A new malleable-iron guard-rail post adapted to the plank and cable type of highway guard rail has recently been announced by the Dayton Malleable Iron Co., Dayton, Ohio. Two types of posts are used alternately, a tall one to support both plank and cable and a short one furnishing additional support for the plank, thus proving effective support with the minimum of obstruction.

The malleable post itself is bolted to a precast concrete foundation. Because of the high elastic limit and shock-resisting qualities of malleable iron, the post is able to withstand sudden impact and deformation without breaking, according to the manufacturer.

Complete information on these guard-rail posts may be secured by those interested direct from the manufacturer by mentioning this magazine.

### Twenty-Five Macks Join Illinois Div. of Highways

A new fleet of twenty-five Mack Model EH trucks for road maintenance was recently purchased by the Illinois Division of Highways. Each truck is equipped with an Anthony heavy-duty hydraulic hoist and an 8-foot 6-inch body of 3-cubic yard capacity. Power diverters permitting the use of hydraulic power for the dump bodies are provided and each unit is also equipped for an hydraulically operated snow plow for use in the winter months.

### COMPLETE WELL POINT SYSTEMS

WILL DRY UP ANY EXCAVATION

Faster—More Economically

Write for Job Estimate and Literature

### COMPLETE

MACHINERY & EQUIPMENT CO., Inc.

Dept. C

36-40 11th St., Long Island City, N.Y.

Tel. IRonsides 6-8000

## MADSEN

Write for Descriptive Literature

## ROAD PUG

The Madsen Road Pug is the one piece of equipment you need to accomplish your road mixing in a single operation without sacrificing batch control. Operated easily by two men and running on economical diesel power, it delivers a product as consistent as plant mix using the same aggregates. The Madsen Road Pug exceeds in capacity. If you are contemplating road mix work, you owe it to yourself to investigate the Madsen process of road mix.

**MADSEN IRON WORKS**  
Manufacturers  
Huntington Park, California

## GRAPPLES Owen Buckets

for Dredging      Rehandling

Excavating

Investigate the Revolutionary New Combination GRAPPLE and ORANGE PEEL BUCKET

Write for the NEW CATALOG

**THE OWEN BUCKET COMPANY**  
6030 Breakwater Avenue • Cleveland, Ohio  
Branches: NEW YORK • PHILADELPHIA • CHICAGO • BERKELEY, CAL.

### NEW EQUALIZING BRAKES assure faster and safer trips

• Brake "grab" and brake "walk" formerly encountered in trailer brakes have been entirely eliminated in the new Rogers system of equalizing brakes.

Compensating levers keep all brakes in constant readiness for instant and effective application and release, regardless of extreme oscillation of the wheels laterally or longitudinally.

For faster and safer operation under all conditions of road and load, buy a Rogers Trailer.

**ROGERS BROTHERS CORPORATION**  
108 Orchard St. • ALBION, PENNA.



PATENT APPLIED FOR



## Details of Concreting At Guntersville Dam

(Continued from page 5)

the materials toward the center where another conveyor carries them forward to a short conveyor running on top of the crib-type surge or intermediate storage bins. The octagonal bins had to be boarded up because the vibration of the conveyors and wind caused the fine sand to run out between the timbers instead of the natural slope of the material holding it within the bins, and to protect it from freezing and not flowing on account of moisture content.

Gates in the bottom of the five octagonal storage bins permit drawing off any material needed in the batcher bins in the mixing plant and it is delivered to them by another conveyor. A hopper over the conveyor between the storage bins and the batcher bins in the mixing plant was installed so that it would be possible to deliver aggregate to the last belt by truck in case of break downs of other parts of the conveying system.

The batching plant has six aggregate bins surrounding a central cement bin. The extra bin for a sixth aggregate is not used. A bar screen over the top of the bin to which the coarse aggregate is run takes out the excess of broken up material and delivers it through a 10-inch pipe to the ground. A telephone system permits the head-house operator to secure the delivery of the material needed promptly. It is delivered to the proper bin by means of a turnhead under the conveyor.

### The Conveyor System

	Width	Length	Speed	HP.
Main aggregate belt.....	30	443	292	40
Stacker belt (movable radially) 30	160	292	40	
Recovery belt to surge bins....	30	298	292	50
Top belt on surge bins.....	30	25	292	10
Surge bins to batcher bins.....	24	520	296	60
Concrete belt.....	36	378	142	25

\*Movable radially  
Note: The motors are all Westinghouse. Barber-Greene furnished all idlers, drives, hoppers, and stacker boom. Brooks-Payne-Oborne Equipment Co. furnished all belting. The steel structures were fabricated by Johnson City Foundry & Machinery Co. The hoist and mast of the radial stacker was used with a guy derrick at Wheeler Dam. The rotating mechanism for mast was furnished by American Hoist Winch & Crane Co.

### The Concrete Plant

The batching system for the concrete plant was designed by C. S. Johnson and consists of two large weighing hoppers divided into three parts each. Moisture meters are inserted in the bins to permit a constant check of the water in the aggregates so that the batch weights and mixing water can be changed to meet the altered moisture content. The water for the batches is weighed and the delivery device on the water pipe has a novel shut-off. The pipe is cut on a 45-degree angle and covered with sponge rubber. The shut-off gate closes directly against the rubber, making a tight joint, and because of the larger cross-section makes the closure tighter with a slightly less pressure. A steam boiler is provided to heat the mixer water and to heat the surge bins, but it was used but little in 1936-37 because of the mild winter.

Mercury switch controls on the beams of the scales control the batch weights. Kron aggregate and water scales and Toledo cement scales are used. The

cement scales are also equipped with a Toledo Printweigh device which records the weight of each batch of cement. The aggregate is batched by a manually-operated lever, connected to an air-ram. The cement is batched automatically by an electric, solenoid-operated, air-ram-operated valve. The dumping of the completed batches to the mixers is controlled pneumatically.

A speaking tube from the weigh platform to the mixer platform permits instant communication. An interconnected telephone system also connects the forms, the mixer plant laboratory, the main concrete laboratory, and the concrete hopper at the end of the conveyor. In the mixer plant laboratory a system of light signals connects with the indicators on the scale dials at the batchers. The batch to be weighed out is indicated by the lights controlled from the plant laboratory. Also in the mixer plant laboratory is a production meter showing the number of batches mixed. Constant checks of the moisture in the aggregates are made by the laboratory, following the readings of the moisture meters.

The mixer plant is operated by a head-house operator, a scale man, and a mixer man. This latter's control table delivers the weighed batches to the proper one of the two 2-yard non-tilting Ransome mixers, and then dumps the mixed concrete to a hopper for delivery to the conveyor. The mixes are all timed for 1½ minutes. The water-cement ratio ranges from 0.45 to 0.55 for different types of concrete by weight and the cement content of the batches is varied to secure the workability desired.

The following table shows some of the various mixes used, the weights being typical. Mix "A" using the largest aggregates is for the lock walls and all mass concrete. Mix "B" is for superstructure and walls, medium reinforcing. Mix "C" is for buildings with heavy reinforcing and thin walls.

### Typical Mixes

Aggregate	Mix A	Mix B	Mix C
1½ to 4-inch.....	1,574	2,013	.....
¾ to 1½-inch.....	1,574	2,013	.....
No. 4 to ¾-inch.....	1,779	2,202	3,228
No. 30 to No. 4.....	1,106	1,475	1,828
Below No. 30.....	767	641	974
Cement.....	865	1,128	1,278
Water.....	433	564	639

Note: All aggregate weights are "surface dry."

The mixed concrete is delivered from the hopper beneath the mixers to a conveyor carried across the lock and delivering to two large hoppers in one

unit of about 4-yards capacity each. Trucks, carrying two concrete buckets of 2-yard capacity, fill the buckets at the hoppers and carry them to the vicinity of the Wileys which pick up the buckets and deposit the concrete where desired. The Wileys move on their tracks to reach the places desired. The Wileys for this work are equipped with gooseneck booms permitting reaching over the forms to deposit the concrete. The reach of the Wileys with straight or gooseneck booms is the same, 95 feet.

### Personnel

The construction of Guntersville Dam, a unit in the TVA program of dams on the Tennessee River, is in charge of Verne Gongwer, Project Engineer, with Geo. K. Leonard as Construction Engineer and G. P. Jessup, Construction Superintendent. H. L. Broadfoot is Assistant Construction Engineer, B. S. Philbrick is Assistant Construction Superintendent.

### Electric Drive Selector And Hints on Maintenance

This is the title of a new 12-page booklet recently prepared by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., to describe and illustrate the requirements which must be met in selecting a motor. A chart showing how to select a motor gives types of motors, applications and descriptions and concrete examples of installations.

A section of the pamphlet is devoted to the important subject of maintenance. The best type of maintenance is preventive and there are discussed ten hints on this type of maintenance, such as planned inspection, insulation cleaning and checking, and locating power loss.

Copies of this booklet may be secured direct from Westinghouse by mentioning this magazine.

## Kinney Reports 1938 Bituminous Distributor Sales Up 300%!

In these times, to actually beat last year's sales record is real NEWS. Yet such is the cheerful report which comes from the Kinney Mfg. Co., 3531 Washington St., Boston, Mass.

W. E. Worcester, Vice-President in Charge of Sales, claims that sales up-to-date simply bear out his earlier prediction that the new Kinney Bituminous Distributor, with the spray air-controlled from the cab, would make an immediate "hit" with Contractors looking with both eyes for possible ways of increasing their PROFIT.

In addition to the cab-controlled spray, Kinney is featuring an alloy steel tank which takes 1000 pounds off the weight of a 1000 gallon Distributor—another help toward more profit.

Kinney Engineers have wisely retained many popular features—the quick starting, ample pump capacity, efficient heating unit low in the tank, fuel tank well away from burners, ladders, hand-rails, relief valves and vents as safety features, etc.

Complete details of this new Distributor are contained in Bulletin A-1938, being mailed to all interested, by the Kinney Mfg. Co.

(Advertisement)

## New Four-Wheel Scraper

A preview of the new Continental Model CS-12-A four-wheel wagon scraper recently brought out by the Continental Roll & Steel Foundry Co., Tractor Equipment Division, Railroad Ave., East Chicago, Ind., was afforded visitors to the Road Show in Cleveland.

This new model is cable-operated and employs two pneumatic-tired dual rear wheels mounted on the unit through axles supported on both sides. The body and apron are of steel plate of ample proportions, heavily braced, and the cutting edge is full width and adjustable for any depth of cut. Two single-tired wheels are used on the front end, located close to the center post to allow for short turns. Weight has been minimized without loss of strength or length of service, according to the manufacturer.

Design and operating details of this Model CS-12-A may be secured by those interested direct from the manufacturer by mentioning CONTRACTORS AND ENGINEERS MONTHLY.

**"THE Buckeye<sup>®</sup> IS  
THE ONLY SPREADER  
I have ever seen  
THAT CAN BE  
CONTROLLED  
Perfectly"**



### OTHERS SAY

"We know there is no other machine as accurate."

"The Buckeye is the only spreader I have ever seen that can be controlled perfectly."

"Accurate to the pound per square yard."

"It is the best spreader I have ever seen in more ways than one."

"It absolutely wastes no stone or slag."

"Accuracy—time saved—but most important is—it satisfies engineers."

From a commissioner of public improvement in Wyoming this report also says it spread with perfect accuracy, and estimates the saving in operating cost to be about one-third.

Before you buy a spreader or bid on work we suggest you get the complete data.

QUOTED STATEMENTS are authentic—we retain in our files the original reports received from users for record and proof of quotations used in our advertising.

**BID THE  
Buckeye<sup>®</sup>  
WAY**  
ask for our operation data before you bid

**Buckeye<sup>®</sup>**  
Surface Material  
SPREADER

THE BUCKEYE TRACTION DITCHER CO.  
Findlay, Ohio

Send at once literature and data on your 1938 Surface Material Spreader.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

THE BUCKEYE TRACTION DITCHER CO.  
FINDLAY, OHIO, U. S. A.

## WILLIAMS FORM CLAMPS

It costs 8c per cu. yd. of concrete for rod replacement in using Williams Clamps on a form design of 800 lbs. pressure per sq. ft.  
Compare this with the cost of your present ties—and you will be added to our list of satisfied Customers.

Order today—24 hr. service—send plans for rod layout.

**Williams Form Engineering Corp.**  
1244 Prospect Ave., S. E.  
Grand Rapids Michigan

## LAYING BLACK TOP?



### JAEGER PAVER has 10 ADVANTAGES:

- 18 Ft. Movable Forms Give Smoothness of Concrete,
- 50% More Traction,
- No Load on New Material,
- Adjustable 9 to 14 Ft. Widths,
- Blends Perfect Joints,
- Capacity to 1000 Tons a Day,
- Lays Hot or Cold Bituminous, Stone or Macadam,
- Pug Mill Spreader,
- Less Hand Finishing,
- Automotive Construction,

Write for New Catalog, Prices.

**THE JAEGER MACHINE CO.**  
701 Dublin Ave., Columbus, Ohio

**JAEGER**



## Bulletins and Pamphlets

For free distribution to contractors, engineers and officials. Write for the catalogs you need.

### Excavating Equipment

631 The Browning Crane & Shovel Co., 16226 Waterloo Road, Cleveland, Ohio, will send to those interested complete information on its Browning truck, crawler or locomotive cranes, shovels, draglines or trench hoes for excavating and material-handling jobs.

### Dump Bodies Carry Spare Tires

632 The new Hercules Tire-Pack dump body with the Center-Lift hoist, an 8-foot body for short wheelbase trucks which provides a space for the spare tire under the body, is described in literature which the Hercules Steel Products Co., Galion, Ohio, will be glad to send on request.

### Improved Wheelbarrow Wheels

633 The new French & Hecht wheelbarrow wheels equipped with Nu-Seal, a device to exclude destructive abrasives such as sand and grit, are described in Bulletin 60, copies of which French & Hecht, Davenport, Iowa, and Springfield, Ohio, will be glad to send on request.

### Easily Erected Asphalt Plants

634 Literature describing Madsen asphalt plants, which are easily erected without the use of a crane and are as readily dismantled for transportation to the next job, may be secured by those interested from the Madsen Iron Works, Huntington Park, Calif.

### New Bituminous Distributor

635 Literature and prices on the new Etnyre Black Topper bituminous distributor, a feature of which is its sectional spray bar which folds for transit, may be secured by interested contractors and state and county highway engineers from E. D. Etnyre & Co., Oregon, Ill.

### Steel Forms for Road Work

636 Heltzel steel road forms, curb forms, curb and gutter forms and forms for bituminous road paving are described in Bulletin S-20-F which also illustrates the many uses of these forms. Copies of this bulletin may be secured from the Heltzel Steel Form & Iron Co., Warren, Ohio.

### Pumps and Hoists

637 Complete information on Novo self-priming pumps in sizes of 5,000 to 90,000 gph and Novo builders' and dragline hoists may be secured by interested contractors and engineers from the Novo Engine Co., 216 Porter St., Lansing, Mich.

### Safety Hats and Skull-Guards

638 McDonald safety hats, made of light but strong airplane metal, offering comfort as well as head protection, and M. S. A. Skullguards of Bakelite composition with special fracture-resisting properties, for the use of workmen in tunnels, on dam and bridge construction and all other jobs where there is danger of falling objects or rock and stones, are described in literature which the Mine Safety Appliance Co., Braddock, Thomas & Meade Sta., Pittsburgh, Pa., will send on request.

### New Folder on Trailers

639 A new folder on Rogers heavy-duty trailers for the transportation of machinery or materials, a feature of which is the new equalizing air or vacuum brakes with which these trailers are equipped, has recently been issued by the Rogers Bros. Corp., 106 Orchard St., Albion, Pa., which will be glad to send copies on request.

### New Tank Car Heaters

640 Cleaver-Brooks Co., Milwaukee, Wis., will be glad to send to those interested complete information on the new Cleaver tank car heater, features of which are the four-pass down-draft construction, integral oil burner, insulated body, rugged frame and novel trapless condensate system.

### Two-Stage Centrifugal Pumps

641 Bulletin No. 7067, describing Cameron two-stage centrifugal pumps, available in capacities of 100 to 2,200 gpm, and illustrating a number of typical installations, may be secured from the Ingersoll-Rand Co., 11 Broadway, New York City.

### Versatile Truck Shovel-Crane

642 The features of the Michigan truck shovel-crane, which can be used as a dragline, clamshell or trench hoe for a variety of work and is easily moved from job to job, are described in Bulletin C, copies of which may be secured from the Michigan Power Shovel Co., Benton Harbor, Mich.

### Road Construction Equipment

643 Bulletin 848, describing and illustrating the 1938 greatly-improved line of road construction machinery, including finishers, mixers and loaders, may be secured on request direct from the Barber-Greene Co., 485 West Park Ave., Aurora, Ill.

### Lubricants for Outdoor Use

644 Booklet W-148 describing Joseph Dixon graphited lubricants for use on machinery used outdoors and therefore exposed to dirt and dust as well as to all kinds of weather conditions may be secured by interested contractors and engineers direct from the Joseph Dixon Crucible Co., Jersey City, N.J.

### Steel or Aluminum Straight-Edges

645 Complete information on GiantgripT straight-edges, made of steel or aluminum, for checking concrete surfaces may be secured by those interested direct from the L & M Manufacturing Co., 10302 Berea Road, Cleveland, Ohio.

### Lights for Night Work

646 National Carbide V-G lights which furnish daylight conditions for night work, spreading a full even beam of 8,000 candlepower wherever it is needed, are described in catalogs which the National Carbide Corp., Lincoln Bldg., New York City, will be glad to send on request.

### Trucks for Contractors

647 Complete information on Ford V-8 trucks, for use on construction jobs and by state and county highway departments, as well as on how to make an "on-the-job" test with your own loads and driver may be secured from the Ford Motor Co., Dearborn, Mich.

### Lubricating Oil for Diesel Engines

648 Information regarding the advantages claimed by the manufacturer for the use of RPM diesel-engine lubricating oil is contained in literature which may be secured direct from the Standard Oil Co. of California, Standard Oil Bldg., San Francisco, Calif.

### New Excavator Booklet

649 Copies of a 20-page catalog describing and illustrating the latest models of Koehring excavators and containing action photographs as well as illustrations of the various features of these machines, may be secured direct from the Koehring Co., 3026 W. Concordia Ave., Milwaukee, Wis. Ask for Catalog No. 233.

### Fastening New Concrete to Old

650 Complete information on Chicago expansion hook bolts and hook bolt inserts for fastening new concrete to old in highway construction and other concrete work may be secured from the Chicago Expansion Bolt Co., 140 So. Clinton St., Chicago, Ill.

### Bituminous Maintenance Unit

651 The new South Bend bituminous maintenance unit, consisting of a trailer-mounted bituminous distributor with hand spraying attachment, for use by state and

county highway departments in road maintenance work, is fully described and illustrated in a new 4-page bulletin which the Municipal Supply Co., South Bend, Ind., will be glad to send on request.

### Blade Grader Catalog

652 The mechanical features of Caterpillar blade graders are enumerated and discussed in a new two-color catalog containing action pictures which may be obtained by writing direct to the Caterpillar Tractor Co., Peoria, Ill. and requesting Form 4254.

**Aercoil OIL BURNING CONTRACTORS' EQUIPMENT**

- KETTLES FOR TAR, PITCH & ASPHALT • EMULSION DISTRIBUTORS
- POWER SPRAYS • LEAD MELTING FURNACES • WEED BURNERS
- TORCHES & BURNERS

Send for FREE Bulletin No. 100-C  
**Aercoil Burner Co., Inc.**  
West New York, New Jersey  
Chicago San Francisco Dallas

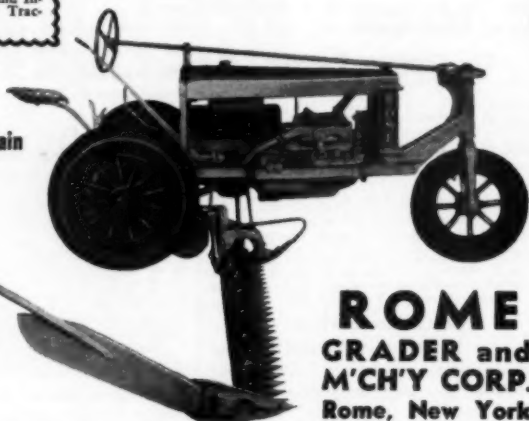
## The ROME Auto-Mower

**ROME also manufactures:-**  
a complete line of Graders: ROME Motor Graders; ROME "High Lift" Drawn Graders and Scarifier Graders, both Straight and Leaning Wheel; ROME "High Lift" Quick Hitch Graders; and ROME Motor Grader Attachments for Models AG, BG and BD Cletrac Tractor, and International T-20 Tractor.

The ROME Auto-Mower meets every demand for a reliable, durable and highly efficient mowing machine for heavy duty, special service, such as mowing highway shoulders, railroad right-of-way, golf courses, public parks, private estates, institution grounds—as well as for weed and field crop mowing.

"The Best Bargain is Quality"

Write for Literature



**ROME GRADER and M'CH'Y CORP.**  
Rome, New York

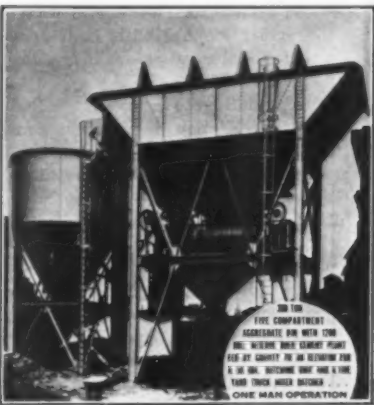
## HELTZEL BIN EQUIPMENT . . .

Whenever or wherever storage, batching or bulk cement plants are needed Heltzel-built equipment has always

been the leader in point of service, ease of installation, economy of operation and length of service. Portable bins, built to suit the requirements of the concern whose base of operations change from place to place, are the only PORTABLE bins on the market.

Standard Circular, Square and Oblong bins, ranging in capacity from 35 to 500 tons, available in one, two, three and four compartments, featuring convertibility from one to two or three or four compartments without making alterations or changes in weighing or batcher equipment, make specially built or designed equipment almost unnecessary.

Bulletins S-18-B and S-21-B, describing in detail these plants and their varied applications, are ready. Write today for your copies.



**HELTZEL STEEL FORM & IRON CO.**  
WARREN, OHIO, U.S.A.

**Heltzel**  
BUILDS IT BETTER

BINS, Portable and Stationary  
CEMENT BINS, Portable and Stationary  
CENTRAL MIXING PLANTS  
BATCHERS (for batch trucks or truck mixers with automatic dial or beam scale)  
BITUMINOUS PAVING FORMS  
ROAD FORMS (with lip curb and integral curb attachments)  
CURB FORMS  
CURB AND GUTTER FORMS  
SIDEWALK FORMS  
SEWER AND TUNNEL FORMS  
SUBGRADE TESTERS  
SUBGRADE PLANERS  
TOOL BOXES  
FINISHING TOOLS FOR CONCRETE ROADS

SEND THIS BACK—WE'LL DO THE REST

CONTRACTORS and ENGINEERS MONTHLY  
470 FOURTH AVE., NEW YORK

Please send me the following literature, without cost or obligation  
(Indicate by numbers)

\_\_\_\_\_

Name \_\_\_\_\_

Firm \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_

P.S. Also send me catalogs and prices on—



## Bulletins and Pamphlets

(Continued from preceding page)

### Features of 1938 Distributor

653 The features of the Kinney 1938 bituminous distributor, including the air control of the spray from the cab, are described in Bulletin A-1938, copies of which may be secured by interested contractors and state and county highway engineers direct from the Kinney Mfg. Co., 3531 Washington St., Boston, Mass.

### New Wheelbarrow Mixer

654 The Lansing Co., Lansing, Mich., will be glad to send to those interested complete information on its new wheelbarrow mixer which will handle a batch of approximately 3 cubic feet and is designed for use on small concrete jobs.

### Dirt-Moving Wagon Scrapers

655 Continental Roll & Steel Foundry Co., Tractor Equipment Division, Railroad Ave., East Chicago, Ind., will be glad to send to those interested complete information on Continental wagon scrapers which are made in 4, 5, 7 and 10-yard sizes, mounted on tired wheels or crawlers.

### Tank Car Heating Boilers

656 The Bros tank-car heating boiler, in two, three and four-car sizes, which is compact, portable and rugged in construction, is described in a catalog which may be secured direct from the Wm. Bros Boiler & Mfg. Co., Minneapolis, Minn.

### Lubricating Equipment Catalog

657 Lincoln Kleenseal grease guns and fittings for contractors' and highway department equipment are described in detail in an illustrated catalog, No. 55, which may be secured by those interested direct from the Lincoln Engineering Co., St. Louis, Mo.

### Drilling Equipment and Accessories

658 The complete line of Gardner-Denver rock-drilling equipment and accessories are described and illustrated in Bulletin G.P. Eighth Edition, which may be secured from the Gardner-Denver Co., Quincy, Ill.

### Painting of Creosoted Wood

659 Directions for painting creosoted wood, which presents an entirely different problem from that of painting untreated wood, are contained in a new booklet which may be obtained by those interested direct from the Wood Preserving Corp., Koppers Bldg., Pittsburgh, Penna.

### Shells for Cast-in-Place Piling

660 The outstanding features of Union Metal fluted steel pile shells, suitable for any job, large or small, where piling is to be used, are described and illustrated in Catalog No. 67, recently issued by the Union Metal Mfg. Co., Canton, Ohio, which they will send to those interested on request.

## Highway Mower Cutter Operates at Any Angle

A feature of the new Centaur Hi-Way mower, made by the Centaur Tractor Corp., Greenwich, Ohio, is its cutter bar which the manufacturer claims operates smoothly and efficiently at any cutting angle. Because the power thrust of the Centaur mower pitman is always in the exact plane of the cutter-bar, at any angle from 45 degrees below horizontal to vertical, undue wear on the knives, stress and strain on the knife-head and pounding shock and strain on the cutter-bar, driving mechanism and engine are eliminated.

The Model K-M Hi-Way mower has a 5 or 6-foot cutter-bar, four speeds forward and one reverse, a range of speeds from 1 to 20 mph and a turning radius of 9 feet 10 inches. Its length is 112 inches, overall, its width 65 inches with the cutter-bar raised and 124 inches when the bar is in cutting position, the wheelbase 60 inches and the tread width 47 inches center to center. Power is furnished by a LeRoi 25-hp engine having a bore of 3 3/4 inches and a 4-inch stroke. It is equipped with pressure-feed lubrication, Zenith carburetor, approved-type air cleaner, high-tension magneto with impulse starter, enclosed fly-ball governor and Autolite starting motor and generator. The front wheels are equipped with 5.50/16-inch pneumatic tires and the drive wheels with 7.50/24-inch pneumatic tires.

Complete details on this new highway

mower are contained in literature which interested contractors, state and county highway engineers may secure direct from the manufacturer by mentioning this magazine.

## Ransome Dealers Appointed

The West Virginia Co., Charleston, W. Va., and the Constructors Supply Co., Durham, N. C., have recently been appointed dealers for the complete line of equipment made by the Ransome Concrete Machinery Co., Dunellen, N. J. In line with Ransome's new sales expansion policy, this company has also appointed the Standard Machinery & Equipment Co., Ltd., 52 Germain St., St. John, New Brunswick, Canada, to handle Ransome concrete mixers up to and including the new 56-S model. Larger sizes will be handled, as at present, by the Canadian Fairbanks-Morse Co.

## Booklet on 1/2-Yard Shovel

The American Gopher Model 350 1/2-yard shovel, which is easily convertible for crane or dragline service and which is available with gasoline, diesel or electric power, is fully described and illustrated in a new 24-page booklet recently issued by the American Hoist & Derrick Co., St. Paul, Minn.

Copies of this Bulletin GS-3 may be secured by those interested direct from the manufacturer by mentioning this magazine.

## MORE MIXER FOR YOUR MONEY!

### GET REX NEW LOW PRICES!

Now Rex Mixers come to you at the lowest price in years—to make their use an even greater economy over old-fashioned, outmoded mixing equipment! Not only lower in first cost, they are lower in operating cost to give more yards mixed over long years of economical service. Built in sizes 3 1/2-S to 14-S; available on any of several types of mountings. Send for bulletins and prices on the sizes in which you are interested. Address the Chain Belt Company, 1666 W. Bruce Street, Milwaukee, Wisconsin.

CHAIN BELT COMPANY  
of Milwaukee  
**REX MIXERS**



## TO CONTRACTORS who demand the best equipment...



105 cu. ft. Portable Compressor  
... Two-wheel Pneumatic-tire Trailer



210 cu. ft. Portable Compressor  
... Four-wheel Steel-rim Towabout



No. 24 No. 10 No. 19 No. 16 No. 8  
Rock Pavement Clay Trench Backfill  
Hammer Breaker Digger Digger Tamper

**WORTHINGTON** offers a line of portable compressors and air tools with proved performance records.

Correctly engineered at every point...built to rigid standards of accuracy for one purpose...**CONTINUOUS, DEPENDABLE, MONEY-SAVING SERVICE FOR THEIR OWNERS.**

60...105...160...210...315  
cubic feet  
ACTUAL AIR DELIVERED

ASK FOR A DEMONSTRATION  
There's a Worthington  
Dealer near you

WORTHINGTON PUMP AND MACHINERY CORPORATION  
General Offices: HARRISON, NEW JERSEY



PC 8-6

## CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Avenue, New York

Enclosed is my remittance of \$2 for the next twelve issues of CONTRACTORS AND ENGINEERS MONTHLY.

Name \_\_\_\_\_

Position \_\_\_\_\_  
(Or Type of Business)

Address \_\_\_\_\_

(City) \_\_\_\_\_

N. B. A two dollar bill, check or postage stamps will be entirely acceptable.

## The LITTLEFORD Model 150 Motorized WHEELED ROLLER



TO THE JOB—A TRAILER—ON THE JOB—A ROLLER

**PORTABILITY.** The most portable roller made. Simply lift the tongue-up-and-over to convert from trailer to roller. Tow it behind any truck or car.

**COMPACTION.** 150 lbs. per inch of roller width. More than other portable—equal to many large tandems.

**ECONOMY.** Roll 800 square yards for less than 10c. operating costs. No experienced operator required to do a good job.

Model No. 150 has brakes, water tank and moisteners on front and main rollers, and 6 h.p. Wisconsin motor.

SEND NOW FOR FULL DETAILS



**LITTLEFORD**

LITTLEFORD BROS.

485 EAST PEARL STREET CINCINNATI, OHIO



## Well-Planned Layout For N. Y. Subway Job

(Continued from page 22)

wooden storage tank, 12 feet in diameter and 14 feet high, located near the bottom of the shaft. From here it is pumped back to the cooling tower.

The water pipes carrying city water and water which is recirculated from the cooling tower are distinctly stenciled "city water" and "tower water."

### High-Pressure Hydraulic System

The high-pressure hydraulic equipment which furnishes the power for all jacking operations on the job, including the installation of the Pretest piles for underpinning buildings and the operation of the tunnel shield, is furnished by two Watson-Stillman hydraulic pumps and an accumulator operating at 5,000 pounds pressure and using 150 pounds air pressure on the air side of the accumulator. The air pressure is furnished by a small V-belt-driven Ingersoll-Rand Type 30 compressor with a 3-hp G-E motor.

Over the tunnel section from 8th to 13th Streets, the contractor was required to replace two old cast-iron gas mains with 20-foot steel lines with Dresser couplings. Trenches 4 feet deep x 3 feet wide were excavated, the pipe laid and backfill placed and rammed with pneumatic tampers on the practical theory of soil mechanics that more material can be rammed into an excavation than is originally removed. This avoids any possible settlement of the repaved trench.

At the top of the earth backfill just beneath the pavement, the contractor buried a heavy-duty hydraulic line. A permanent sheet asphalt pavement on a concrete base was immediately placed over the line, thus departing from the general practice of placing temporary pavement over trenches. This 1-inch hydraulic line will be abandoned and left in the street at the end of the contract. On the sections of the street which are decked, the hydraulic line is carried immediately below the decking.

### The Hog House

A well-laid-out "hog house" is provided for the sand hogs working under air. Steel lockers, toilets, showers and several pot-belly stoves are installed to furnish sufficient heat for the workers. Every stove is set on an earth base to protect the concrete and is surrounded by a two-pipe guard to prevent the workmen from burns. A janitor is provided to keep the rooms clean at all times and many illustrated and news magazines are provided by the contractor for the use and entertainment of the men during their rest periods.

Adjacent to the hog house are two transformer rooms through which current is taken from two sources: one, the Hudson Avenue Station of the Brooklyn Edison Co. in Brooklyn, and the other an independent feeder from the Water-side Station of the New York Edison Co. at East 42nd Street, thus protecting the job against failure of electric current.

### Track Planking

Below the mezzanine, where tunnel excavation is started along the east side of the Hudson & Manhattan iron tubes, and also beneath them to reach the westerly side, there is an extensive industrial track system for handling muck from the headings and material for the construction of the twin tunnels. The industrial track system from the shaft to the two tunnels is adequately planked as a safety measure.

### Barricades

We have never seen a job with a greater abundance of heavy barricades

made readily visible with plenty of fresh green and red paint, with the contractor's name in white. The A-frame supports are separate from the barricade proper, which is a 2 x 12-inch plank with double cleats near the ends for the insertion of the horses. These heavy barricades are set up at every danger point throughout the job, wherever decking is removed for excavation on open-cut work, and are set sufficiently far back so that pedestrians, who are always fascinated by construction, can not readily fall over or under the barricade and slip into a hole.

### Surface Drains

The curse of excavation is water. Ground water may be handled in a number of ways and we have mentioned one used by this company. Surface water from adjacent streets running into the main thoroughfare presents another problem. On this section of the Sixth Avenue subway it has been solved in a novel manner. A grating has been set at the edge of the excavation on each cross street and then the space between the street and the decking sealed with cold patch. These gratings are made from 3/4 or 1-inch plate with 2-inch square holes cut out by acetylene torches. They are mounted on 3-foot cube concrete boxes which drain into the contractor's suspended sewer lines or flumes carried beneath the decking.

### The Man on the Street

Whether "the man on the street" is a casual pedestrian, the local storekeeper, some nearby resident, or a visitor to the job, his welfare is looked after in every possible way. The barricades, flagmen and smooth sidewalk and roadway deckings protect him from accidents which might be caused by the construction in progress. Spencer, White & Prentiss has been the recipient of letters from residents of Greenwich Village and others who have been in the vicinity, congratulating them on the way they have taken care of the "man on the street."

A courtesy or protection which the engineers and members of the firm always bestow upon visitors, and there are many including their contractor friends, engineers and technical students, is that the man guiding the individual or party always goes down a ladder, up a stairway or through an opening or across a plank first, to insure that it is entirely safe for the vis-

itor. Hard hats are provided for all those entering the rock work and are mandatory for all labor. Members of the firm and engineers are not excluded from this ruling.

### Personnel

The contractor for Section 6 of the Sixth Avenue subway is Spencer, White & Prentiss, Inc., of New York City. The work is under the immediate supervision of Lazarus White, President, assisted by Herbert M. Hale, Managing Engineer, and H. Pagliaro, General Superintendent. This subway is being built by the Board of Transportation of New York City, for which Jesse B. Snow is Chief Engineer, B. Toughtaling, Division Engineer, Arthur Clark, Assistant Division Engineer, and Robert Taylor, Section Engineer with Joseph Shanahan, Field Engineer.

### Safety Equipment

The problem of safety on construction jobs and the use of equipment contributing to workers' safety and welfare is one which is receiving increasing attention, as the campaign for safety goes forward. Compliance with a few sound safety rules and the use of safety equip-

ment to protect workmen from injuries can do much to decrease the number of injuries and lost time due to them.

The complete line of Strauss safety belts, protective hats, reflector belts, foot and shin guards, face masks and similar equipment to be used for the safety of workers on the ground, on structures or underground is described and illustrated in a 40-page catalog recently issued by the Strauss Co., Pittsburgh, Pa.

Copies of this Catalog No. 37 may be secured by interested contractors and engineers direct from the manufacturer by mentioning this magazine.

Be sure it's the

**GIANTGRIP**  
STRAIGHTEDGE

Either Steel or Aluminum

For Checking Concrete Surface

Two useable edges:—one sharp-cornered and squared for scraping; the other rounded for line-point straightening.

ASK YOUR DEALER

L & M Manufacturing Co.

(Division of Media Forge Co.)

10302 BERA RD., CLEVELAND, OHIO

## PICK CMC FOR PROFITS!

You can't go wrong on any piece of equipment in this new CMC Line. It is built right and priced right to make money for you. CMC Equipment is 100% efficient, yet is priced to give you the most for your money. Get our new catalog.



● CMC New Streamlined, Fast Moving Two-Wheel Trailers in 5s, 7s and 10s sizes.



● CMC New Dual Prime Pumps 1 1/2" to 4". Faster priming—higher pumping efficiency.



● CMC General Utility Double Drum Hoist. 100% hoist efficiency without extravagance in cost.



● CMC Dumpover Pneumatic Tired Cart—Faster material handling at lower cost.

**CONSTRUCTION MACHINERY COMPANY**  
WATERLOO, IOWA



The enthusiastic acceptance of Heil Dig-N-Carry Scrapers is based on the obvious time saving and money making features built into this remarkable series of dirt movers. Your nearest Heil distributor will welcome an opportunity to show you how you can save time and money with dependable Heil Dig-N-Carry Scrapers. Address your inquiry to:

MILWAUKEE,  
WISCONSIN

**THE HEIL CO.**

HILLSIDE,  
NEW JERSEY

**HEIL**  
Quality  
PRODUCTS

HOISTS BODIES TANKS  
ROAD SCRAPERS SNOW PLOWS  
BOTTLE WASHERS DEHYDRATORS  
OIL BURNERS WATER SYSTEMS



## DIRECTORY OF EQUIPMENT DISTRIBUTORS

The following cards (arranged by states) show the names of dealers in contractors' equipment and supplies, with a record of various lines handled.

### ARIZONA TRACTOR & EQUIP. CO.

1402 North 19th Ave., P. O. Box 1494,  
Phone 3-1146, Phoenix, Ariz.

#### Representing

CLETRAC Tractors  
ATECO Ditchers, Bul-  
ldozers, Tamping Rollers,  
Scarfing  
BROOKVILLE Locomotives  
BROS. Bulldozers, Angi-  
dozers, Snow Plows  
BUCKYRUS-ERIE Shovels  
BUFFALO-SPRINGFIELD  
Rollers  
CLEVELAND Rock Drills  
EAGLE Crushers

EMSCO Road Equipment  
GARWOOD (Isaacson)  
Ditchers, etc.  
KEWANEE Conveyors  
LITTLEFORD Asphalt  
Bulldozers, etc.  
SCHRAMM Compressors  
SIGNAL SERVICE Road  
Signs  
SMITH Mixers  
WHITE & INDIANA Trucks

Member: Associated Equipment Distributors

### F. RONSTADT HARDWARE COMPANY

"Pioneers in Good Merchandising"

#### TUCSON

DAVENPORT Rippers & Dirt Moving Equipment  
GALION Graders and Bol-  
lers  
MCCORMICK-DEER-  
ING Industrial and  
Crawler Tractors  
MCCORMICK-DEER-  
ING Diesel and Gas  
Power Units  
STERLING Hoists  
STERLING Portable  
Pumps

#### ARIZONA

P & H Shovels & Elec.  
Welders  
POMONA Turbine  
Pumps  
MYERS Pumps  
KINDALL-KROGH  
Centrifugal Pumps  
TOLEDO Road  
Turbines  
WOOD Hand Shovels

### GARLINGHOUSE BROS.

2416 E. 16th St. Los Angeles, Calif.

Southern California Distributors for

RANSOME—Concrete Mixers, Pavers, Pneu. Planters,  
Grouters, Concrete Placing Equipment,  
Jackinghammers, Pumps, etc.  
BROWNING—Truck Cranes, Shovels, Locomotive Cranes  
OWEN—Clamshell Buckets  
OMAHA—Dragline Buckets  
WHITCOMB—Gasoline, Diesel, Electric Locomotives  
A. LESCHEN & SONS—Wire Rope  
MCKIERAN-TERRY CORP.—Pile Hammers  
LAMBERT-NATIONAL—Hoists and Cables  
DIAMOND IRON WORKS—Crushers, Portable Gravel Pl.  
RAMSEY—Hand and Power Winches  
NOVO—Engines, Pumps, etc.  
UNIVERSAL—Panel Forms, Form Clamps, etc.  
Manufacturers of Gas-ara Concrete Cuts, Wheelbarrows,  
Concrete Hoppers, Buckets, etc.

### EDWARD R. BACON CO.

Folsom at 17th St. San Francisco

Allis-Chalmers Tractors  
American Concrete Grinders  
Byers Shovels, Cranes  
Carlsen Bit Grinders  
Cedar Rapids Crushers  
Cleveland Rock Drills  
Cleveland Tractors  
Double Derrick, Piling  
Erie Rollers  
Hercules Chip Shredders  
Hercules Power Units  
Hughes Universal Sweepers  
Hoyer Rollers  
Ingersoll Transways  
Jager Mixers, Pumps, Hoists,  
Paving Equip.  
Johnson Bros. Batching  
Jones Saw Benches

Mckieran-Terry Pile Ham-  
mers  
Marion Shovels, Cranes,  
Draglines  
Multibelt Pavers  
Ohio Locomotive Cranes  
Page Dragline Buckets  
Potts Conveyors  
Ramsey Winches  
R. B. Fitzgerald  
Submarine Air Compressors  
Sweeney Crane Crushers, Vi-  
brating Screens  
Teledo Torches  
Vibor Concrete Vibrators  
Walter Motor Trucks  
Ward Pumps  
Winslow Scales

Member: Associated Equipment Distributors

### NORRIS K. DAVIS, INC.

400 Seventh St. San Francisco, Calif.

#### Representing

LE ROI CO.—Gasoline Power Units and Parts  
WINN, STL. & MACHY, CO.—Twin City Engine, parts  
HANSON CLUTCH & MACHY, CO.—Full Revolving  
Shovels, Cranes, Draglines, 1/2, 3/4, and 1-1/2 yd.  
KEYSTONE DRILLER COMPANY—Excavating Ma-  
chines, Shovels, Cranes, Draglines, Full-Sizers, Skin-  
ners, Plunger Shovels, Permanent Breakers  
DAVIS COMPANY—Large Tilling Mowers, 1, 2, 3, and  
4-yd. Weigh Batching, Batching Plants, Manual or  
Full Automatic Operation, Headmix Concrete Plants  
and Equipment, Motor Truck Concrete Mixers and  
Carriers, Electrically Operated and Controlled Water  
Motors, Steel Bins, Bins, Dumpers, Hoppers, Bunker  
Gates, Chutes  
O. K. CLUTCH & MACHY, CO.—Hoists & Compressors  
CONSTRUCTION MACHY, CO.—Wonder Mixers, Hoists

### GARFIELD & CO.

Hearst Building San Francisco

#### Representing

LINK-BELT Shovels, Cranes, Draglines  
RAY CITY Shovels, Cranes, Draglines  
PLYMOUTH Gas and Diesel Locomotives  
INDUSTRIAL BROWN HOIST Crane  
WORTHINGTON Compressors, Drills, Pumps  
ATLAS Battery, Locomotives  
AUSTIN Trenching Machines  
PACIFIC Steel Crushers  
LEACH Concrete Mixers  
ROSENBERG Trailers

### LLEWELLYN MACH. CORP.

1030 N. Miami Ave., Miami, Florida

Amer. Car & Foundry Co.  
Amer. Saw Mill Machy. Co.  
Amer. Baldwin Wagoning Co.  
Anchor Concr. Machy. Co.  
Atlas Imp. Diesel Eng. Co.  
Barber-Greene Co.  
Brylson Mfg. Co.  
Climax Engrs. Co.  
Coffey Electric Co.  
Coffey Hoist Co.  
Coldwell Luen Messer Co.  
Congress Trust Co.  
Hercules Diesel & Elec. Engrs.  
Eckhart Rubber Works  
Forest City Bilt. Tool Co.  
Gallagher & Livingston Co.  
L. H. Gilmer Co.  
Gould Pump, Inc.  
Hercules Motor Corp.  
Hewitt Rubber Corp.  
Industrial Equip. Tool Co.  
Ingersoll-Rand Co.  
Member: Associated Equipment Distributors

### R. S. ARMSTRONG & BRO. CO.

676 Marietta St. Atlanta, Ga.

#### Representing

BEERE Hand Hoists  
BUCKYRUS-ERIE Cranes,  
Shovels  
BUTLER Bins, Batches  
CARBIDE LIGHTS  
CHICAGO PNEUMATIC  
Air Compressors  
DOMESTIC Pump, Hoists  
GENERAL ELECTRIC Mo-  
tors  
HERCULES Road Rollers  
HYPERPRESSURE JENNY Va-  
por Cleaning Machine  
JAGER Concrete Mixers,  
Pumps, Paving Machy.

Member: Associated Equipment Distributors

### TRACTOR & MACHINERY CO., INC.

351 Whitehall St., S.W., Atlanta, Ga.

#### Representing

NORTHWEST Cranes, Shovels and Draglines  
NOVO Engines, Pumps and Hoists  
CHAMPION Rock Crushers  
ERIE Aggrement Plants  
RANSOME Concrete Mixers  
WORTHINGTON Air Compressors

Member: Associated Equipment Distributors

### YANCEY BROTHERS, INC.

634 Whitehall St., SW Atlanta, Ga.

"CATERPILLAR" Tractors  
Rex Power Units, etc.  
REX Pavers, Pumps  
BARBER-GREENE Ditch-  
ers, Concrete Loaders  
CEDAR RAPIDS Crushers  
KINNEY Ditchers, Pumps  
CORSEY Kettles, Tools  
CLYDE Hoist & Erect. En-  
gineers  
RANSOME Winches & Hoists  
BUFFALO-SPRINGFIELD  
Rollers  
KILFLEPP Rippers, Drag  
Scraper, Piers, Harrows  
LAPLANT-CHOATE Crawl-  
er Dump Wagons, Bul-  
ldozers, Dumpers  
WARD Road Pavers  
WHEELBARROW Scales, Bulk  
Conent Plants  
INGERSOLL-RAND Air  
Compressors, Pneu. Tools  
TWIN-LORAIN Shovels  
TINKEN Drill Bits & Steel  
Member: Associated Equipment Distributors

### F. H. BURLEW COMPANY

221-25 W. Huron St. Chicago, Ill.

AMERICAN HOIST Crawl-  
er Cranes, Shovels, Hy-  
draulic Bulldozers, Snow  
Plows  
BATES Wire Ties, etc.  
BEERE Bros. Hoists  
CHAIN BELT Mixers,  
Conveyors, Elevators,  
Compressors, Hoist Mixers  
ERIE Steel Bins, Batches  
INSLEY Concr. Towers,  
Chutes, Cranes, Shovels,  
Choker Hooks, Carts  
Mckieran-Terry Corp. (Divi-  
sion)  
MCKIERAN-TERRY—Pile Hammers, Extractors  
LAMBERT-NATIONAL—Hoists, Cables  
STEEL & CO.—Special Machinery  
Wheelbarrows, Hose, Cable Rope, Tarpsaulins,  
etc., carried in stock  
Member: Associated Equipment Distributors

### O. T. CHRISTERSON CO.

3900 So. Wabash Ave. Chicago, Ill.

#### Representing

KOENIG—Mixers, Pavers, Cranes, Shovels, Dumpers,  
Mail Jacks  
KWIK-MIX—Concrete and Bituminous Mixers  
BLAW-KNOX—Road Forms, Bins, Batches, Finishing  
Machines, Buckets  
GORMAN-RUPP—Self Priming Centrifugal Pumps, Road  
Pumps  
LITTLEFORD—Distributors, Tar Kettles, Heaters,  
Turbines  
PARSONS—Trunch Machines, Backfillers, Turbo Mixers  
C. H. & E.—Road Pump, Saw Rigs, 2-Ton Rollers  
R. B.—Power Subgraders, Trailgraders  
CHICAGO PNEUMATIC TOOL CO.—Compressors, Air  
Tools, Hoses  
CLEVELAND—Subgraders, Straight Edges, Finishing  
Tools  
Concrete Carts, Wheelbarrows, Supplies

### PEORIA TRACTOR & EQUIPMENT CO.

400 Franklin Street Peoria, Illinois

#### Representing

Athy Truss Wheel Co.  
Caterpillar Tractor Co.  
Killefer Mfg. Corp.  
LaPlant-Choate Mfg. Co.  
R. C. LeTourneau, Inc.  
Williamette-Hyster Co.  
Universal Crusher Company  
Telephone 6177

### INDIANA EQUIP. CO., INC.

327-329 West Market St., Indianapolis, Ind.

#### Representing

ATHEY TRUSS—Wagons, Owen—Clam Shell Buck-  
ets  
BUFFALO-SPRINGFIELD  
—Rollers  
"CATERPILLAR"—Road  
Machinery  
"CATERPILLAR"—Trac-  
tors  
GARDNER-DENVER  
—Concrete Tools  
LAPLANT-CHOATE—Wag-  
ons, Scrapers, Bulldozers  
LE TOURNEAU—Scrapers, Buggies, Bulldozers

Member: Associated Equipment Distributors

### GIERKE-ROBINSON CO.

4th & Ripley Sts. Davenport, Iowa

#### Representing

BLAW-KNOX—Steel Road, Curb and Gutter Forms,  
Bins, Batches, Clamshell Buckets, Truck Turntables,  
Concrete Road Finishing  
CHAIN BELT—Mixers, Pavers, Pumps, Saw Rigs, Con-  
veyors, Elevators  
CLYDE—Gasoline and Steam Hoists, Derricks  
HOUGH-UNIVERSAL—Derricks  
MASTER—Vibrators, Generators, Arc Welders  
SULLIVAN—Air Compressors, Tools  
TRACKON—Crawlers, Shovels and Bulldozers  
THEW-LORAIN—Cranes, Shovels, Draglines  
TINKEN—Detachable Back Bins, Steels  
UNIVERSAL—Truck Cranes  
UNIVERSAL—Form Clamps

Member: Associated Equipment Distributors

### THOMAS L. BARRET

712 West Main St., Louisville, Kentucky

C. H. & E. Road Pumps, PIONEER Crank and Joint  
Hoists, Bars  
RUSSELL Scrapers, Drags, KENNEDY Crushers,  
Piers, Screens, Elevators  
KNICKERBOCKER Con- LEROI High Efficiency Air  
crete Mixers Compressors  
BAY CITY Shovels and BARRET Asphalt Expansion  
Cranes Joint  
BETHLEHEM Reinforcing LACROSSE Two-Way Ma-  
Bars chinery Trailers  
HERCULES Road Rollers

### HENRY A. PETTER SUPPLY COMPANY

Paducah Kentucky

Alameda Equipment  
American Wire Rope, Mesh  
Bates Bar Ties  
Bates Wire Ties  
Black & Decker Tools  
Cedar Rapids Crushers  
Chain Belt (Hose) Mixers  
D-A Lubricants  
Dayton Compressors  
Dodge Derricks  
Elastic Expansion Joint  
Ewald Scrapers  
Fairbanks Scales  
Farquhar Engines, Boilers  
Gardner-Denver Tools  
General Electric Motors  
Gulf States Reinforcing  
Hansen Excavators  
Hook Hangers and Thaws  
Johnson Bins and Hoppers  
Leffell Gas Engines  
Logwood Hoisting Machy.  
Link-Belt Cranes, Shovels  
Littleford Equipment  
Lorain Pumps and Hoists  
Oswald Apparatus  
Pave Buckets  
Portable Concrete  
Rogers Bros. Trailers  
Saugen Scrapers  
Saugen Derricks  
Shank Grader Blades  
Teledo Torches  
Universal Concr. Accessories  
Vulcan Pile Equipment  
Ward Graders  
Ward Road Machinery  
Worthington Pumps  
Wyoming Shovels

### FLETCHER EQUIP. CO., INC.

309 Magazine Street New Orleans, La.

#### Representing

ARCHER Towers and Chot-  
ing Equipment  
BATES Wire Ties  
BETHLEHEM Wire Rope  
BUTLER Bins, Batches  
BYERS Cranes, Draglines,  
Rollers  
CLYDE Hoisting Engines,  
Derricks, Whirlers  
DIAMOND Screening Plants,  
Crushers  
FREMAM Turntables  
Saugen Graders, Rollers  
LE ROI Gas Engines  
LINK-BELT Draglines,  
Cranes, Shovels  
LITTLEFORD Hoists, Ket-  
tles, Distributors  
M & H Form Clamps  
Member: Associated Equipment Distributors

### ALBAN TRACTOR CO., INC.

725-27 East 25th St. Baltimore, Md.

#### Representing

CATERPILLAR TRACTORS AND ROAD MACHINERY  
LINK-BELT CO.  
GENERAL EXCAVATOR CO.  
KILLEFER MFG. CO.  
LAPLANT-CHOATE MFG. CO.  
R. C. LETOURNEAU, INC.  
GARDNER-DENVER CO.  
"INVADER" SHOVELS  
WILLAMETTE-HYSTER CO.  
ATHEY TRUSS WHEEL CO.  
BLAW-KNOX CO.  
HERCULES ROLLER CO.  
ROSENBERG CO.  
W.M. BROS. ROLLER MFG. CO.  
BUCKEYE TRACTION DITCHER CO.  
PIONEER GRAVEL EQ. MFG. CO.

CATERPILLAR DIESEL AND GAS POWER UNITS

Member: Associated Equipment Distributors

### D. C. ELPHINSTONE, INC.

115 S. Calvert St. Baltimore, Md.

976 Nat'l Press Bldg., Washington, D. C.

#### Representing

Kuehling Co.  
Kwik-Mix Co.  
Insley Mfg. Co.  
Parsons Co.  
Geo. Hais Mfg. Co.  
Sawman Bros. Inc.  
Allis-Chalmers Mfg. Co.  
Worthington Pump & Machy. Co.  
Lion Mfg. Corp.  
Owen Bucket Co.  
Leach Co., Inc.  
Allis-Chalmers Mfg. Co.  
Erie Steel Constr. Co.  
H. K. Parke Co.  
Road-Prep Corp.  
Trucon Steel Co.  
Mckieran-Terry Corp.  
Parsons Co.  
Hodall Rubber Co.  
Minvax Co.  
E. D. Elyre & Co.  
Hough-Universal Sweepers  
Griffin Wallpoint Corp.  
Gorman-Rupp Company  
Quilt Road Machinery Co.  
Cleaver-Brooks Co.  
Hauk Mfg. Co.  
Member: Associated Equipment Distributors

### JOHN C. LOUIS COMPANY

511 W. Pratt St. Baltimore, Md.

#### Representing

JAGER—Concrete Mixers,  
Pumps, Truck Mixers, etc.  
LAKEWOOD—Finishers,  
Forms, Towers  
AMERICAN CABLE—Tro-  
ley Wire Rope  
BUTLER—Bins  
CENTAUR—Road Mowers  
ADAMS—Leaning Wheel  
Graders  
ALABAMA—Cast Iron Pile  
WHEELING—Corrugated  
Culvert Pipe  
GOOD ROAD—Crushers  
LITTLEFORD—Asphalt  
Heater, Distributors  
JONES—Saw Rigs  
GENERAL—Wheelbarrows  
TIMKEN—Detachable Back  
Bins

Member: Associated Equipment Distributors

### THE HENRY H. MEYER CO.

110 S. Howard St., Baltimore, Md.

628 Munsey Building, Washington, D.C.

#### Representing

Barber-Greene Co.  
Blaw-Knox Co.  
Boston & Lockport Bl. Co.  
Byers Machine Co.  
Phillips Carey Co.  
Columbus Conveyor  
Conveyer & Co., Inc.  
Dobbie Dry. & Mash. Co.  
Domestic Eng. & Pump Co.  
L. F. Martin Mfg. Co.  
Harrington Co.  
Ingersoll-Rand Co.  
A. Leschen & Sons Rope Co.  
Logwood Mfg. Co.  
Lima Locomotive Works  
Master Vibrator Co.  
New Engine Co.  
Plares Equip. Co.  
Pulsometer Steam Pump Co.  
Ransome Concrete Machy.  
Richmond Screw Anchor Co.  
Sterling Wheelbarrow Co.  
Templeton, Konly & Co.  
Union Iron Works  
Universal Road Machy. Co.

Member: Associated Equipment Distributors

### CLARK-WILCOX COMPANY

790-798 Albany St. Boston, Mass.

#### Representing

RANSOME—Concrete Mixers, Chuting Equip.  
NORTHWEST—Cranes, Shovels, Draglines  
BLAW-KNOX—Steel Forms, Bins, Buckets, Finishers  
PIONEER—Crushers, Gravel Plants  
CARTER—"Hundinger" Pumps  
INGERSOLL-RAND—Air Compressors  
OPEL-SENOWE—Hoists, Rollers, Mixers  
HAUCK—Oil Burners and Heaters  
HALL—Batches, Conveyors and Loaders  
ALLIS-CHALMERS—Tractors  
CLEVELAND—Formers  
C. R. JAHN CO.—Trailers  
Jahnsen Piers, Road Machinery  
HOMESTEAD—Hydraulic Jenny Cleaner  
PIERCE—Rollers, WASTEN—Vibrators  
WHEAT—Wheelbarrows  
BLYSTONE—Motor Mixers  
HAZARD—Wire Rope, Cable  
ATLAS—Powder, Blasting Equipment  
Member: Associated Equipment Distributors

### THE EQUIPMENT CO.

30 Prentiss St. Boston, Mass.

#### Representing

Link-Belt Cranes and Shovels  
Ingersoll-Rand Compressors and Tools  
"Williams" Buckets and Trailers  
Homelite Pumps and Generators  
Hanson Excavators and Trailers  
COMPLETE RENTAL SERVICE  
Member: Associated Equipment Distributors

### HEDGE & MATTHEIS CO.

285 DORCHESTER AVE. BOSTON, MASS.

Boston, Springfield, Worcester, Mass.; Portland, Bangor,  
Me.; Hartford, New Haven, Conn.; Concord, N. H.;  
Bellevue, Pa.; etc.  
J. D. Adams Co.  
Aerol Burrer Co.  
Aerol Elevator Co.  
Byers Machine Co.  
Chicago Automatic Conveyer  
Electric Tapper & Et. Co.  
Erie Steel Constr. Co.  
Fair Wheel & Iron Sales Co.  
Frisk, Carl H.  
Huber Mfg. Co.  
Ingersoll-Rand Co.  
Jager Machine Co.  
Jensen Superior Machine Co.  
Logwood Engrs. Co.  
A. Leschen & Sons Rope Co.  
Wood Shovel & Tool Co.  
Lima Locomotive Wks., Inc.  
Shovel & Crane Division  
Lima Manufacturing Corp.  
Mckieran-Terry Corp.  
Lambert-Nat'l Hoist Div.  
Page Engineering Co.  
Parsons Co.  
Saugen Bros. Inc.  
Hagers Bros. Corp.  
Saugen Derrick Co.  
Saugen Bros. Inc.  
Syntron Co.  
Jensen Pressed Steel Co.  
Universal Form Clamps Co.  
Wood Shovel & Tool Co.

Member: Associated Equipment Distributors

### ABRAMS - ANDERSON CO.

Construction Equipment

10425 Northlawn Ave., Detroit, Mich.

#### Representing

Aerol Burrer Co.  
Archer Iron Works  
Brookville Locomotive Co.  
Butler Bin Company  
Bucyrus-Erie Co.  
C. H. & E. Mfg. Co.  
Hazard Wire Rope Company  
Independent Pneumatic Tool Co.  
Le-ROI-Rix Compressors  
Saugen Derrick Company  
T. L. Smith Company  
Smith Engineering Works  
Sterling Wheelbarrow Co.  
Teledo Pressed Steel Co.  
Member: Associated Equipment Distributors

### KELLER TRACTOR & EQ. CO., Inc.

5163-69 Martin Ave., Detroit, Mich.

Aerol Burrer Co., Inc.  
American Steel Batcher Co.  
Ames Baldwin Wagoning Co.  
Athay Truss Wheel Co.  
Baker Mfg. Co.  
Bates Wire Ties  
Ray Roller & Mfg. Co.  
Caterpillar Tractor Co.  
Construction Machy. Co.  
D-A Lubricant Co.  
Huber Mfg. Co.  
John Deere Co.  
Detroit Harvester Co.  
E. D. Elyre & Co.  
Gardner-Denver Co.  
Harrischlager Corp.  
Highway Trailer Co.  
Huber Mfg. Co.  
Hydranger Corp.  
Kuehling Steel & Wire Co.  
Killefer Mfg. Co.  
LaPlant-Choate Mfg. Co.  
R. C. LeTourneau, Inc.  
A. Leschen & Sons Rope Co.  
Michigan Wire Fence Co.  
Mckieran-Terry Corp.  
Parsons Co.  
Rutley Saw Saw Co.  
Saugen Derrick Co.  
Shanklin Mfg. Co.  
Speer Machinery Co.  
Sterling Machinery Co.  
Timken Roller Bearing Co.  
Trackson Co.  
Universal Crusher Co.  
Williamette-Hyster Co.

Member: Associated Equipment Distributors



**CONTRACTORS MACHY. CO.**

530 Monroe Ave., N.W. Grand Rapids, Mich.

Northwest Engineering Co.  
Sullivan Machinery Co.  
Pioneer Gravel Equipment  
Mfg. Co.  
Clyde Sales Company  
Page Engineering Co.  
American Steel & Wire Co.  
Borch Corporation  
Ross Snow Plows  
Sagen Derrick Company  
Sagman Brothers  
Syston Company  
Lefski Company  
Aerial Borer Company  
Gossney & Company

Merritt-Bassett Company  
Ames Shovels  
Hess Manufacturing Co.  
Tolide Pressed Steel Co.  
Jesse Wire Ties  
Baker Mining and Pump  
Ames Gas Pumps  
Blaw-Knox Company  
Dietz Lanterns  
Black & Decker Tools  
Atlas Conveyors  
Hawley Vibrators  
Lensing Company

Member: Associated Equipment Distributors

**LANGE TRACTOR & EQ. CO.**

304 Lake Ave., S. Duluth, Minn.

Caterpillar Road Machinery  
and Tractors  
LaPlant-Chateaux Wagons,  
Buildings, Snow Plows,  
Scrapers  
Killefer Scrapers, Road  
Ditch, Blippers  
Davis Air Compressors  
Cleveland Rock Drills  
Ames Baldwin Wyoming  
Hanson Trailers

Williamette-Hyster Hoists  
and Winches  
Wassau Tractor and Truck  
Snow Plows  
Developers Gas and Diesel  
Locomotives  
Oshkosh 4-Wheel Drive Trucks  
Anthony Power Locomotives  
MayWhitely Wire Rope  
LaTourneau Contrs. Equip.  
Speeder Shovels  
Alfay Crawler Wagons  
Klein Street Sweepers

Member: Associated Equipment Distributors

**THORMAN W. ROSHOLT CO.**

3138 Snelling Ave. Minneapolis, Minn.

IOWA "Cedar Rapids"  
Crusher Plants and Equip.  
KOEHRING Pavers, Mix-  
ers, Cranes, Dumpers,  
Mud-Jacks, Shovels  
RAMSEY Hoists and  
Winches  
CHICAGO Pneumatic Com-  
pressors and Tools  
MCCORMICK-DEERING  
Industrial Tractors  
KWIK-MIX Mixers  
RIDDELL Power Grader  
JOHNSON Batches and  
Demountable Sites  
TRACKSON Loaders and  
Cranes  
BYERS Shovels and Cranes

VULCAN Steam and Gas  
Locomotives  
LIDGERWOOD Hoists  
SARGENT Snow Plows  
METAL FORMS CORP.  
HISCO Trailers and Mi-  
nimum Distributors  
WALTER Trucks  
SORMAN-RUPP CO. Pumps  
UNION IRON WORKS  
BUFFALO-SPRINGFIELD  
Rollers  
MAYERS Vibrators  
OWEN Buckets  
BEACH Saws  
CLEAVELAND-BROOKS Rollers  
BUOYRU-ERIE Scrapers  
and Bulldozers  
BARCO Hammer

Member: Associated Equipment Distributors

**WM. H. ZIEGLER CO., INC.**

Minneapolis, St. Paul, Duluth, Crookston, Minn.

"CATERPILLAR" — Trac-  
tors, Engines, Road Ma-  
chinery  
LAPLANT-CHATEAU — Bul-  
ldozers, Snow Plows, Dump  
Wagons  
LAYORNEAU — Dirt Mar-  
ins, Road Engines  
KILLEFER — Road Blippers,  
Scrapers  
ATHEY — Crawlers, Dump  
Wagons, Trailers  
BUOYRU-ERIE — Power  
Shovels, Cranes, Draglines  
PIONEER — Crushers, Gravel  
Plants  
REX — Mixers, Pavers, Ma-  
chine, Pumps, Saw  
Rigs

BUTLER — Bins, Batches  
BARKER — Concrete Com-  
pactors, Loaders, Ditchers  
F. W. D. — Four-Wheel  
Drive Trucks  
PLYMOUTH — Locomotive  
GARDNER-SEVEN — Air  
Compressors, Drills  
LESCHER — Wire Rope  
LITTLEFORD — Oil Dis-  
tributors, Tire Knives,  
Hammers  
"WILLIAMS" — Buckets,  
Hoists, Trailers  
HYPERBURE JENNY —  
Spray Cleaners  
MADSEN — Asphalt Plants

Member: Associated Equipment Distributors

**BUBLITZ MACHINERY CO.**

2305 Pennway, Kansas City, Mo.

Austia-Waters Rd. Machy. Co.  
Cleveland Tractor Co.  
Jagor Machine Co.  
Lafayette Engineering Co.  
The Shovel Co.  
Barber-Grove Company  
McKiernan-Terry Corp.  
Whitcomb Locomotive Co.  
Butler Bin Co.  
"Williams" — Buckets and Trailers  
Ames Baldwin Wyoming Co.  
Red Star Products Co.  
Sagen Derrick Co.  
Schramm, Inc.  
Electric Tamping & Equipment Co.  
Hawley Petroleum Corp.  
Bathlehem Steel Co. (Williamport Div.)

Member: Associated Equipment Distributors

**O. B. AVERY COMPANY**

1325 Mackland Avenue St. Louis, Mo.

AUSTIN Tractors  
HERCULES Rollers  
BLAW-KNOX Bins, Buckets, Finishers, Forms  
BRODERICK & BASCOM Wire Rope  
CHAIN BELT Mixers, Pavers, Pumps  
DEMPEY Compactors  
LACROSE Trailers  
KEWANE Conveyors  
KOB Spreaders  
LAMBERT-NATIONAL Hoist  
McKiernan-Terry Pile Drivers  
NORTHWEST Shovels, Cranes & Draglines  
PIERCE Rollers  
R-B Scrapers  
CEDAR RAPIDS Crushers  
STANDARD Bituminous Distributors  
SULLIVAN Compressors & Air Tools  
VULCAN Locomotives

Member: Associated Equipment Distributors

**CORBY SUPPLY COMPANY**

3942-46 W. Pine Blvd., St. Louis, Mo.

AMERICAN — Flexible Metal Hose  
BUNL CO. — Portable Air Compressors  
CHAMPION Heavy Duty Welding Rod  
DETROIT HOIST & WAGN. CO. — Air and Electric  
Hoists  
DEVILBESS CO. — Palm Wire Equipment  
HARDWOOD WONDER DRILL CO. — Rock Drills and  
Paving Breakers  
W. H. KELLEY, INC. — Street Pneumatic Tools  
MUNSELL — Air-Operated Concrete Vibrators  
PANDORR CORP. — Sandblast Equipment  
PENNYLVA — Air Compressors and Pumps  
DAVID ROUN & SON — Chain Hoists  
STANLEY — Air and Pipeline Filters  
R. A. STRAND & CO. — Flexible Short Equipment  
VICTOR — Welding and Cutting Apparatus  
WESTINGHOUSE — Welding Equipment  
GUSTAV WIDENKE CO. — Tube Expanders

**JOHN FABICK TRACTOR CO.**

Gravois &amp; Iowa Aves. St. Louis, Mo.

Athey Truss Wheel Co.  
Blaw-Knox Company  
Buffalo-Springfield Roller Co.  
Caterpillar Tractor Co.  
Killefer Mfg. Co.  
LaPlant-Chateaux Mfg. Co.  
Pioneer Gravel Equip. Mfg. Co.  
The Shovel Company  
Williamette-Hyster Co.  
R. G. LeTourneau, Inc.  
Ramsey Machinery Co.

Member: Associated Equipment Distributors

**JOSEPH KESL TRACTOR & EQUIP. CO.**

1819 North 13th St. St. Louis, Mo.

Wm. Bros. Roller & Equip. Co.  
General Wheelbarrow Co.  
Tolide Pressed Steel Co.  
Contractors Machinery Corp.  
R. & S. S. S. Co.  
Construction Machy. Co.  
Fairbanks, Morse & Co.  
Ames Baldwin Wyoming Shovel Co.  
Aerial Borer Co.  
C. H. & E. Mfg. Co.  
Halsey-Layton Co.  
Page Engineering Co.  
St. Louis Steel Products Co.  
Sagen Derrick Co.  
Sisson-McLean Co.  
Trasken Co.  
Vulcan Iron Works

Member: Associated Equipment Distributors

**C. F. RABBEIT, INC.**

1523 N. Broadway St. Louis, Mo.

Butler Bin Co.  
Cleveland Foregrader Co.  
Cleaver-Drye Co.  
Fairbanks, Morse & Co.  
Flynn Mfg. Co.  
Good Roads Machinery Corp.  
Frank G. Hough Co.  
Huber Mfg. Co.  
Insley Mfg. Co.  
Koebling Co.

Kwik-Mix Concrete Mixer  
Lidgerwood Mfg. Co.  
Master Vibrator Co.  
Metal Form Corp.  
Northern Conveyor Co.  
Parsons Co.  
Sterling Machinery Corp.  
Sterling Wheelbarrow Co.  
Wellman Engineering Co.

Member: Associated Equipment Distributors

**THE GEO. F. SMITH CO.**

Franklin &amp; Channing Aves. St. Louis, Mo.

Ingersoll-Rand — Com-  
pressors, Air Tools  
Clyde — Hoists and Derricks  
Crescent — Chainhoist Buckets  
Hester — Hoists  
Sagen — Derricks & Winches  
Sullivan — Electric Saws,  
Drills  
Stokes — Shovels  
Lafayette — Engines  
Symons — Columns, Clamps  
Winthrop — Hoisting Scales  
Universal — Pile Drivers  
Link-Belt — Cranes, Shovels,  
Draglines  
New — Pumps

Vulcan — Steam and Drop  
Hammers  
Waukesha — Engines  
Mell-Vibrators and Grind-  
ers  
Archer — Tower Equipment  
Red Star — Wheelbarrows  
and Shovels  
Templeton, Keady & Co. —  
Trench Braces, Jacks  
Smith — Mixers, Pavers  
Smith — The Wire and Tools  
American Steel & Wire  
Rosen — Winches

Member: Associated Equipment Distributors

**LOOK THIS DIRECTORY OVER CAREFULLY**

If you find any errors while checking over this directory will you please advise us, because it is our desire to keep it accurate and up to date at all times.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Ave. New York

**NORTHWEST EQUIP. CO., Inc.**

Box 1112 Great Falls, Mont.

Complete Line of Road Machinery and Contractors' Equipment

Representing

PIONEER Gravel Equip.  
KOEHRING Mixers, Pav-  
ers, Shovels  
INSLEY Concr. Towers  
PARSONS Ditchers  
PANTHER OIL, Grease

COLEMAN Trucks  
OWEN Buckets  
SCHRAMM Air Com-  
pressors  
MayWHYTE Rope  
CLEVELAND Rock Drills

Steel Bridges and Traffic Trucks, Frames, Poles,  
Scrapers, etc.

Member: Associated Equipment Distributors

**HEYNIGER BROTHERS**

6th Ave. &amp; F St., Belmar N. J.

Contractors' Equipment

Representing

Jaeger Mixers  
Self-Priming Pumps  
Diaphragm Pumps  
Richmond Form Ties  
Rubber Hose and Boots  
Manilla and Wire Rope  
Expansion Joint  
Screw Jacks  
Air Compressors

Grass Mowers  
Aerial Torches & Ket-  
tles  
Reinforcing Rods  
Cement Waterproofing  
Galvanized Rods and  
Bolts  
Iron and Wood Blocks  
Heavy Hardware

Member: Associated Equipment Distributors

**DALE & RANKIN, INC.**

113 Frelinghuysen Ave., Newark, N. J.

Representing  
REX Mixers and Pavers  
REX Pumps  
REX Saw Rigs  
HELTZEL Road Forms and Bins  
CHAMPION Sewer Cleaning Machines  
INGERSOLL-RAND Compressors and Tools  
HANSON Cranes & Excavating Equip.  
HANSON Heavy-Duty Trailers  
VIBRO Elec. & Pneu. Concrete Vibrators  
WALSH Snow Plows  
AEROL Heaters and Tools  
WINSLOW Scales  
UNIVERSAL Concrete Accessories  
JACKSON Wheelbarrows  
ALEMITE Guns and Fittings

Member: Associated Equipment Distributors

**JOHNSON & DEALAMAN, INC.**

60 Marshall Street Newark, N. J.

Representing  
RANSOME Pavers, Mixers, Chuting Equipment  
SCHRAMM Air Compressors, Tools  
ALLIS-CHALMERS Tractors, Graders & Power Units  
BAKER Bulldozers & Graders  
JOHNSON Steel Bins and Batches  
ERIE Gasoline Rollers  
BARLOW Centrifugal, Diaphragm and Plunger Pumps  
RED STAR Wheelbarrows, Bush Boxes, Column Clamps  
and Adjustable Shores  
OSGOOD Shovels, Cranes and Draglines  
GENERAL Shovels, Cranes and Draglines  
NOTCHKISS Road and Sidewalk Forms  
VIBRO-CAST & JACKSON Concrete Vibrators and Mix.  
Power Plants  
AMERICAN Snow Plows

Member: Associated Equipment Distributors

**CONTRACTORS WHITE SALES CORP.**

P. O. Box 949 Albany, N.Y.

Representing

Allis-Chalmers Mfg. Co. — Baker Mfg. Co., Inc.  
Tractors, Road Machs.  
Hendley Asphalt Co.  
Jagor Machine Co.  
General Excavator Co.  
Ingersoll-Rand Co.  
The Osage Co.

Baker Mfg. Co., Inc.  
Hendley Asphalt Co.  
Hercules Roller Co.  
Hough Universal Sweepers  
Pioneer-Gravel Plants,  
Crushers

**DOW & COMPANY, INC.**

Court &amp; Wilkeson Sts., Buffalo, N.Y.

Exclusive Distributors of

ADAMS — Lancing Wheel Graders  
BARCO — Lancing Hammers  
C. M. & E. — Pumps, Hoists, Saw Rigs  
BIRCH — Snow Plows  
HUGHES — Universal — Graders  
INTERNATIONAL — Tractors & Power Units  
MOHAWK — "Hatchet" Excavators, Bunchers  
T. L. SMITH — Mixers, Pavers, Tower Pavers  
THEW-LORAIN — Shovels, Cranes  
UNIVERSAL-LORAIN — Shovels, Truck Cranes  
WALTER — Snowblowers, Tractor Trucks  
"WILLIAMS" — Buckets, Trailers  
JOY — Snow Loaders  
ARMCO — Corrugated Culverts  
RUSWAL — Woodworking Machinery  
LITTLEFORD BRIDGE — Wheelbarrows

Member: Associated Equipment Distributors

**LLOYD G. ROSS**

3090 Main St. Buffalo, N. Y.

Representing

Allis-Chalmers Mfg. Co.  
Burch Spreaders  
Coleman Trucks  
General Excavator Co.  
Hercules Roller Co.  
Quick-Way Truck Shovels  
Ross Snow Plows

Sale and Rent of All Kinds of Construction Equipment

Member: Associated Equipment Distributors

**EUGENE F. VAN NAME**

116 John Street Horseheads, N. Y.

Representing

ALLIS-CHALMERS — Tractors, Graders  
AEROL — Bunchers  
ARMCO — Culverts  
A-W — Traffic Road  
BAKER — Road Drags, Snow Plows, Bulldozers  
C.M.C. — Wood & Marsh-Capable Mixers  
DIAMOND — Crushers, Conveyors, Screening & Washing  
Rolls  
HUBER — Rollers  
HOTCHKISS — Sidewalk Forms  
JACKSON — Wheelbarrows  
LANCING — Wheelbarrows  
WILES — Concrete Block Machine  
ROWE — Cast, Drift Snow Fence  
SWEET'S — Steel Posts  
THEW-LORAIN — Shovels, Cranes  
UNIVERSAL-LORAIN — Shovels, Trailers  
WORTHINGTON — Compressors  
WILLIAMSPORT — Wire Rope  
WISCONSIN SPECIAL — Snow Plows

Member: Associated Equipment Distributors

**JOHN R. TINKLEPAUGH**

LIVINGSTON NEW YORK

Br. OH. Route 9, Albany County, Newtontville, N.Y.

Representing

Cleveland Tractor Company  
Gar Wood Industries, Inc.  
York Modern Corporation  
Oshkosh Motor Truck Mfg. Co.  
Overhead Tractor Shovel Co.  
Euclid Road Machy. Co.  
Killefer Mfg. Co.  
Maine Steel Products Co.

Member: Associated Equipment Distributors

**COMPLETE MACHINERY & EQUIPMENT CO., Inc.**

"Specialists in Pumps"

Webster Ave. and Hancock St.

Long Island City New York

Representing

HUMPHREYS MFG. CO. — Diaphragm, Plunger  
and Centrifugal Pumps  
INGERSOLL-RAND CO. — Air Compressors  
COMPLETE — Wellpoint Systems  
KADCO CORP. — Dust Control Equipment  
MARLOW — Self-priming Centrifugal & Plunger  
Pumps  
MALL TOOL CO. — Concrete Vibrators  
McKiernan-TERRY CORP. — Pile Hammers  
KOEHRING CO. — Concrete Mixers

Member: Associated Equipment Distributors

**GEORGE MALVESE & CO.**

New Hyde Park, N. Y.

Long Island Distributors:

CLETRAC Crawler Tractors  
"SILVER KING" Trac-  
tors  
ADAMS Graders  
SARGENT Snow  
Plows

LOCKE Power Mowers  
EUCLED Scrapers  
OLIVER Implements  
BRODERICK & BAS-  
COM Wire Rope

WORTHINGTON Power Mowers  
Also Pumps, Mixers

Member: Associated Equipment Distributors

**R. E. BROOKS COMPANY**

"Serving the Contractor for over 25 years"

50 Church Street New York, N.Y.

Representing

Beach Mfg. Co. — Saw Rigs  
Blaw-Knox Co. — Road and Sidewalk Forms, Bins, Batch-  
ers, Finishing Machines, Spreaders, Buckets  
Cleaver-Brooks Co. — Tank Car Hoppers, Hoppers  
German-Rupp Co. — Pumps  
Hug Co. — Trucks  
Insley Mfg. Co. — Excavators, Concrete Chuting Plants,  
Buckets, Cars  
Koebling Company — Pavers, Mixers, Shovels, Cranes,  
Mud Jacks  
Kwik-Mix Mfg. Co. — Concr. Mixers  
Master Vibrator Co. — Concr. Vibrators  
Parsons Co. — Trench Machines  
Pioneer-Gravel Equipment  
Ross Mfg. Co. — Oil Distributors

Member: Associated Equipment Distributors

**A. P. DIENST CO., Inc.**

Contractors' Supplies

140th St. &amp; 3rd Ave., New York, N. Y.

Distributors for

GRETAG Grease  
TOLEDO Bull Frog Wheelbarrows  
WYOMING Red Edge Shovels  
DUFF Sewer Trench Braces  
CURRY Wire Ties  
KEYSTONE Grease

Telephone MOtt Haven 9-5430

**J. C. HOUSTON**

30 Church Street New York, N.Y.

Representing

BROWNING CRANE & SHOVEL CO.  
HOISTING MACHINERY CO.

Warehouse

ELIZABETH, N.J. — L.V. R.R.

**MAHONEY-CLARKE, INC.**Complete Line of Contractors' Equip-  
ment and Supplies.

217 Pearl Street New York, N.Y.

Representing

Middell Graders  
Richmond Tractors, Anchors  
Ingersoll-Rand Air Compressors, Rock Drills, Pneumatic  
Tools  
Gas, Electric, Pneumatic Concrete Vibrators  
Pumps of all descriptions  
Hotchkiss Road & Sidewalk Forms  
Lancing Concrete, Mortar Mixers  
Vulcan Pile Hammers, Extractors, Parts  
Willey Concrete Buckets  
Temple Road Material Spreaders

Rental Service

**H. O. PENN MACHY. CO., INC.**

140th St. &amp; East River Bronx, N. Y.

Representing

CATERPILLAR Tractors  
and Accessories  
LAPLANT-CHATEAU MFG.  
CO.  
ATHEY TRUSS WHEEL  
CO.  
R. G. LeTOURNEAU, INC.  
MARION Shovels, ½-3 yds.  
KIEHLER Buckets

SPEEDER Shovels, ½-½ yds.  
DEERE Indus. Tractors  
SMITH Mixers, Pavers  
LORAI Compressors, Engines  
H. L. T. E. L. Steel Bins,  
Form  
FRINK Saw Plows  
MARLOW Pumps  
KIEHLER Buckets

Warehouse Stock—Service Station

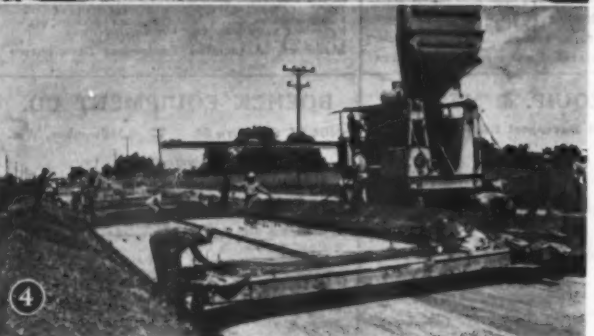
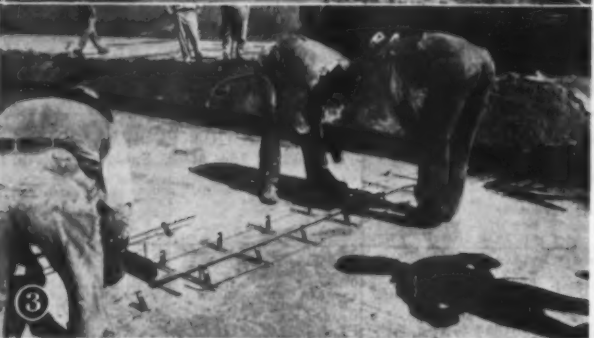
Member: Associated Equipment Distributors





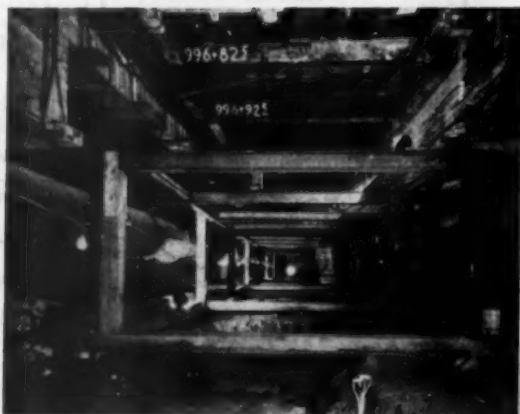


# Contractors *and* Engineers Monthly



C. & E. M. Photos

T. L. James & Co. Paves Another Section of the Air Line Highway Between Baton Rouge and New Orleans, La. 1. The Formgrader Cutting Trench for Steel Road Forms. 2. A Heavy Subgrader Converting Rough Grade into a Smooth Even Foundation. 3. The Steel Gang Sets a Dummy Joint. 4. Setting Steel, Pouring and Finishing the 30-Foot Slab. See Page 1.

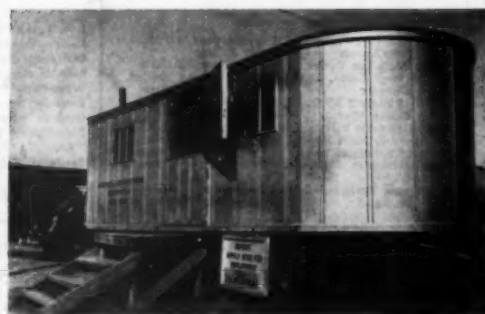


A View of the Excavation for the Sixth Avenue Subway in New York City, with the Excavation down to Elevation 100. Note the Well-Constructed Stairway in the Background.

The Hoist House and Water-Cooling Tower in Spencer, White & Prentiss' Yard on Section 6 of the Sixth Avenue Subway in New York City. See Page 2.



Drilling Operations at Davidson's Point, North of Virginia City, Nevada, on the Historic Geiger Grade Route Which Was Recently Realigned and Reconstructed. The Isbell Construction Co. Was the Contractor for the Final Link. See Page 10.



The Comfortable and Efficient Trailer Office of A. C. Campbell Co. See Page 2.

Below, the Completed Lock and Spillway of Guntersville Dam, At Guntersville, Ala., Which Is Now in Its Third Stage of Construction. See Page 5.





a for  
y in  
Ma.  
100.  
stair.  
l.

elger  
Was